NOVEMBER, 1953

WOOD and wood products

THE NATIONAL MANAGEMENT AND PRODUCTION MAGAZINE
OF THE FOREST PRODUCTS INDUSTRY

Frank E. Mower
See Wood Salutes

Features in This Issue

How to Make Quality Control Pay Off

New End Joint Method Utilizes Short Pieces

Building Trailers That Stay Put

Is Your Foreman on Management Team?

Methods of Testing Glue Joints

Other Items to See

- Materials Handling
- Current Prices
- News and Trends
- Readers' Letters
- Wood Puzzlers
- New Products

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feed is available.

Full particulars on request.
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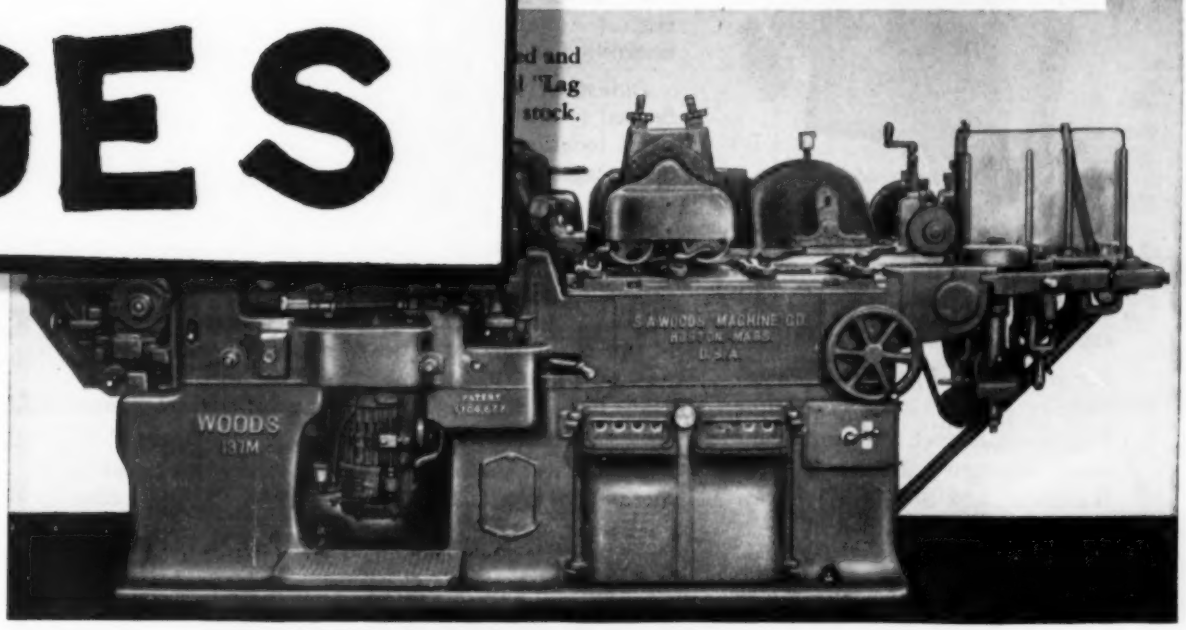

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The Woods 137M Electric Moulder with patented "Lag Bed" feed is designed for versatility and flexibility for every woodworking plant that does moulding work of any kind, furniture, cabinets, chairs, trim or interior finish. Quickly accessible for profitable operation on long or short runs. Hopper feed is available.

Full particulars on request.
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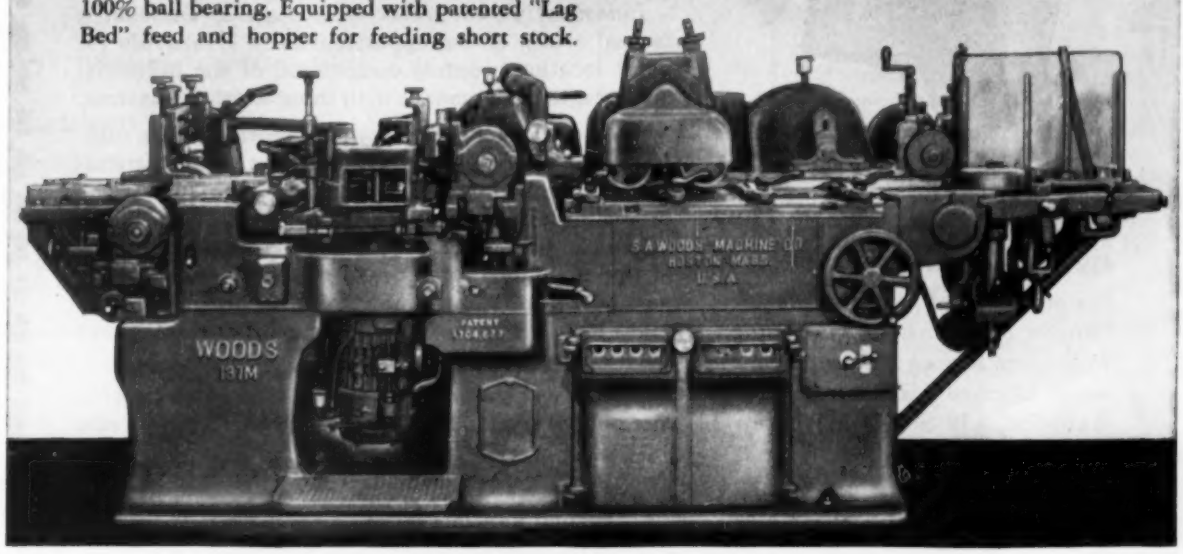
Woods 137M 6" Electric Moulder. Motorized and 100% ball bearing. Equipped with patented "Lag Bed" feed and hopper for feeding short stock.



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Evansville, Indiana Plays an Important Part in *"Industrial Fore-Site"

Basic economic advantages confirm the growing potentialities for industrial expansion in the Evansville area

WRITE FOR THIS FREE ECONOMIC STUDY OF EVANSVILLE, INDIANA

For your copy of *Industrial Potentialities of Evansville, Indiana*, write in confidence to: Chief Economist, Chicago & Eastern Illinois Railroad, 332 South Michigan Blvd., Chicago 4, Illinois.

The supply base for most of America's industries lies north of the Ohio River. Evansville, on the Ohio, has the most strategic position for converting these materials to the needs of the region south of the river. Also, as the major manufacturing and transport site nearest America's center of population, Evansville is unexcelled as a nationwide distribution point.

Industrial Potentialities of Evansville, Indiana, a factual study of the opportunities in Evansville for plant location, permits comparison of the industrial advantages of Evansville with those of other locations.

The book includes documented information on utilities, mineral resources, transportation, labor, agriculture and warehousing . . . all contributing to the production and distribution opportunities of the Evansville area. It also includes tabulations, by commodities, of the amounts and values of industrial consumption and output. This invaluable information answers many local marketing and supply questions which may determine plant site selection.

**"Industrial Fore-Site"—A shrewd management quality that gets the jump on competition by choosing plant sites with superior economic advantages.*

Your Consulting Engineering Firm will find this information necessary in analyzing Evansville, Indiana, relative to your requirements.

CHICAGO & EASTERN ILLINOIS RAILROAD

C&EI

WOOD and wood products

Vol. 58, No. 11

NOVEMBER, 1953

QUALITY CONTROL

How to Make a Quality Control Program Pay Off 21

UTILIZATION

New End Joint Method Broadens Market for Short Pieces 23

PRODUCTION

Building Trailers That Stay Put 25

MANAGEMENT

Is Your Foreman on the Management Team? 27

MATERIALS HANDLING

How to Ruin Quality Products 30

ADHESIVES

Methods of Testing Glue Joints 32

DEPARTMENTS AND NEWS

Industry News and Trends	7	Patent Digest	47
Coming Events	12	Names and Events	50
Letters to the Editor	16	New and Improved Products	60
Editorial	19	New Catalogs and Literature	66
Current Lumber Prices	40	Trading Post	76
Wood Puzzlers	42	Wood Salutes	78

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(advertisement)

Mauk Talk

Statistics prove that 90% of all auto accidents are caused by the other driver.

* * *

Overheard at a cocktail party: "Don't you think David dresses nattily?"

To which someone replied, "Who's Natalie?"

* * *

Song dedication to Ed Sullivan: "Since You Turned on the Electric Blanket too high I'm the Toast of the Town."

* * *

When it comes to adapting to new fashions in clothes you'll have to admit women show more backbone than men.

* * *

Sitka Spruce — we proudly announced its availability in August and your response was immediate. We have constantly replenished our supply and this fine item is still available.

If you use Sitka Spruce, MAUK Lumber Co. can be of special use to you. Prices and specifications upon request.

* * *

Simple Celia says a working gal has a good chance to get a husband—if she works overtime.

* * *

Small boy, on being disciplined, "Don't say 'must', mother. It makes me feel 'won't' all over."

* * *

And then there's the platinum blonde, sometimes classified as a precious metal and sometimes as a common ore.

MAUK Seattle Lumber Co.
Seattle, Washington

* * *

C. A. MAUK Lumber Co.
Toledo, Ohio

Don't take our word for it ! !

READ WHAT THIS USER HAS TO SAY ABOUT C. O. PORTER MACHINERY

S. R. HUNGERFORD COMPANY, INC.
MEMPHIS 14, TENNESSEE

May 13, 1952

MAIL ADDRESS
P. O. Box 1868
Lamar Station
Memphis, Tenn.

C. O. Porter Machinery Co.
668 Front Ave., N. W.
Grand Rapids 4, Michigan

Gentlemen:

When we recently expanded our plant in Memphis, Tennessee, at which time we doubled our production facilities, we had the problem of equipping our mill room with the latest in high speed production wood working machinery. We kept two factors in mind; quality of machine work required and continuous high speed production. We were very careful in the selection of our machinery and spent much time on this problem.

We are happy to say that we chose several of your machines for key spots in our plant. We are presently using a Porter Hydra-Cut Saw, two Porter Routers and a Porter Shaper. To date we have had excellent results with these machines and are highly pleased with their performance. We have not regreted our choice and wish to commend you highly on the quality of your product.

Yours very truly,

S. R. HUNGERFORD COMPANY, INC.

J. A. Jaques
Vice President, Assistant Superintendent of Production

JAJ:jm

Here are the PORTER MACHINES in Action at the S. R. HUNGERFORD COMPANY

The Porter 43-20J Hydracut Saw
Just position the lumber against the adjustable cut-off stops and press the foot control. The saw does the rest. Cuts worker fatigue, speeds production.

The Porter 612 Router
Fast, efficient, with power to spare. Like all Porter machines the Porter Router will take heavier cuts and require less adjusting.

The Porter Double Spindle Shaper
The extra speed, capacity and strength of the Porter Shaper helps increase production and cuts costs for woodworking plants throughout the United States.

Hungerford
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Write for details on the advantages of Porter machinery in your plant.

Dividend Designed by **PORTER**

C. O. PORTER MACHINERY CO.

660 Front St. N. W. **Grand Rapids, Michigan**

NOVEMBER, 1953

WOOD and wood products

VOL. 58, NO. 11

INDUSTRY NEWS and TRENDS

LUMBER

Survey Group Sees Good '53

The Lumber Survey Committee closed its recent 89th quarterly report to the Secretary of Commerce by stating "general business conditions are expected to be good through the year and indicate a good potential demand for lumber . . ."

The Committee reported a gradual softening in the market during the second quarter of 1953 as reflected in the gentle slide in the wholesale price index for lumber and in reports of the closing of some mills caught between high production costs and a smaller return for their products. Evidence of strength could be found in high level output by active mills during the first half of the year and in the considerable amount of lumber moving to major markets.

The output of lumber for the first half of 1953 was an estimated 19,363 million board feet, 7 per cent above the corresponding 1952 period. That total shipments of lumber continued to be slightly more than production was attributed by the Committee to the firmer tendencies of hardwoods.

Lumber Barometer Near Normal

Lumber shipments of 518 mills reporting to the National Lumber Trade Barometer for the week ending September 26 were 1.5 per cent below production. In the same week new orders were 2.1 per cent below production. Unfilled orders of the reporting mills amounted to 33 percent of stocks. For the reporting softwood mills unfilled orders were equivalent to 20 days' production at the current rate, and gross stocks were equivalent to 57 days' production.

For the year to date, shipments of reporting identical mills were 1.9 per cent above production; new orders were 1.1 per cent above production.

Timber Construction Gaining

Advancements in timber engineering have brought timber to the point where it must again be considered in seeking the most practical and economic solution to a structural problem, Ralph H. Gloss of the Timber Engineering Co. told members of the Alabama Section, American Society of Civil Engineers, at their fall meeting in Montgomery.

"Fastenings were in the past the Achilles heel of timber construction, but present day design procedure and modern timber connectors provide a simple 'answer to most problems," said Gloss. He also discussed the variety of clear-span timber roof trusses and trussed rafters and the use of Teco's wedge-fit connectors in their assembly.

Pony Leaguers Learn How Boxes Are Made

Champions of Des Plaines Pony Baseball League learn how boxes are made by watching crate being stitched during tour of General Box Co. laboratory at Des Plaines, Ill. Team was sponsored by firm as part of better community relations program.

Southern Pine Spurs Promotion

A strong trade promotion program, strengthened and expanded wherever possible, was approved by the Southern Pine Assn. board of directors recently. The board plans to conduct a vigorous drive among non-subscriber mills as well as asking greater support from members.

Progress in lamination and fabricated structural lumber was given a boost by a pledge of $1,000 to the American Institute of Timber Construction. Also approved were exposure tests to find paints most suitable for southern pine. The feeling was expressed that the lumber industry must take the initiative to regain losses of the past 20 years in private forestry.

WOOD CONTAINERS

MSC Offers Packaging Degree

The Michigan State College forest products department has launched a new four-year course in packaging technology, first of its kind in the nation. Seven students took a container course last winter, but the four-

year program will cover all phases of engineering, salesmanship, business administration and wood utilization, plus general college training.

The idea was first discussed at a 1950 forestry meeting in Washington State by John Ladd, MSC alumnus now with General Box Co, Michigan State has spent three years planning the curriculum which includes manufacturing processes, packaging principles, wood preservation, consumer and industrial packaging, cost analysis and traffic administration.

100 in Wirebound Box Course

Approximately 100 new registrants employed by member companies of the Wirebound Box Manufacturers Association have begun studies in wirebound box and crate design and specifications which will lead them to earning "Wirebound Engineer" insignia by next September.

The lessons, conducted by the Wirebound Institute, are accompanied by questionnaires designed to compel absorption of the texts submitted and answered by mail. Students must also attend regional clinics at three intervals during the course, now streamlined in its coverage of wirebound box and crate design checking of performance.

In two previous courses, a total of 271 members of the wirebound shipping container industry have won their "Wirebound Engineer" insignia.

EKSTROM, CARLSON

CASINO

Stress-Relieved

HIGH SPEED SHAPER STEEL

and THIN KNIVES

These same important principles of Uniformity apply to the outstanding line of Ekstrom, Carlson Thin Knives as well.

UNIFORMITY is the outstanding and valuable quality of Casino Shaper Steel. Uniform Material assures maintenance of performance from order to order. Uniform Accuracy, achieved through precision grinding and finishing by highly skilled men, insures maintenance of fit in all tools and machines. Uniform Hardness . . . and careful relief of internal stresses . . . insures not only top-quality cutting, but also maximum safety under strenuous conditions. Write for our New Catalog showing all Ekstrom, Carlson Woodworking Tools.

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MACHINERY AND TOOLS SINCE 1904

FURNITURE

'53 Output at Record Pace

The furniture industry is headed for an all-time production mark for 1953, according to early October reports from leading southern manufacturers. Shipments and sales, too, are generally keeping stride, although some firms report a recent leveling to the still strong pace of 1952.

Manufacturers centered around High Point, N. C., listed volume gains of from 10 to 20% over last year when polled last month. Even those who noted recent softening trends in orders from dealers could still point to record totals for the year as a whole.

Members of the Southern Furniture Manufacturers' Association reported shipment gains for the first seven months of the year of 20% over the similar 1952 period. Manufacturers bearing out this average were Dallas, Inc., of High Point, and Dixie Furniture of Lexington. United Furniture reported a 15% gain, Tomlinson and Burton Upholstery 10% boosts each.

New designs and more quality are keynoting the fight for business. Improved production methods—including instrument-controlled drying of lumber, conveyers to speed assembly processes, reduced bonding time by use of improved glues and presses, and use of heat to speed finishing processes—have made possible high quality without raising prices.

1953 Piano Sales Strong

An 11 per cent increase in the sales of pianos during the first eight months of 1953 has been reported over a like period in 1952. Total year's sales through August were 101,181 as compared with 91,151 a year ago. Inventories are reported down, and the traditionally heavy sales season of September through December got under way with the sales running about even with a year earlier.

FINISHING

Quick-Dry Process Developed

A new process called Chem-Dry, which promises to improve quality and reduce costs in wood finishing, was unveiled recently at Armour Research Foundation of Illinois Institute of Technology. Sponsored by the Meyercord Co., the Chem-Dry process is now available to industry, sub-

Get Swift Satisfaction for Your Adhesive Needs with

RCI GLUES

Whether you use hot press, cold press, or R/F, whether you patch or splice, whether you make plywood, furniture or utilize wood waste, you'll find the glue that's exactly right for you in RCI's wide-range line.

RCI manufactures urea-formaldehyde, phenol-formaldehyde and resorcinol resin adhesives, as well as soybean and casein glues . . . produces its own phenol and formaldehyde to assure quality . . . supplies you promptly via rail tank car or highway tank wagon from numerous strategically-located plants . . . aids you technically from nation-wide field service offices.

All we ask you to do is try a production run of the glue we'll recommend for you. Call or write us, and you'll see why it pays to make RCI your source of glue supply.

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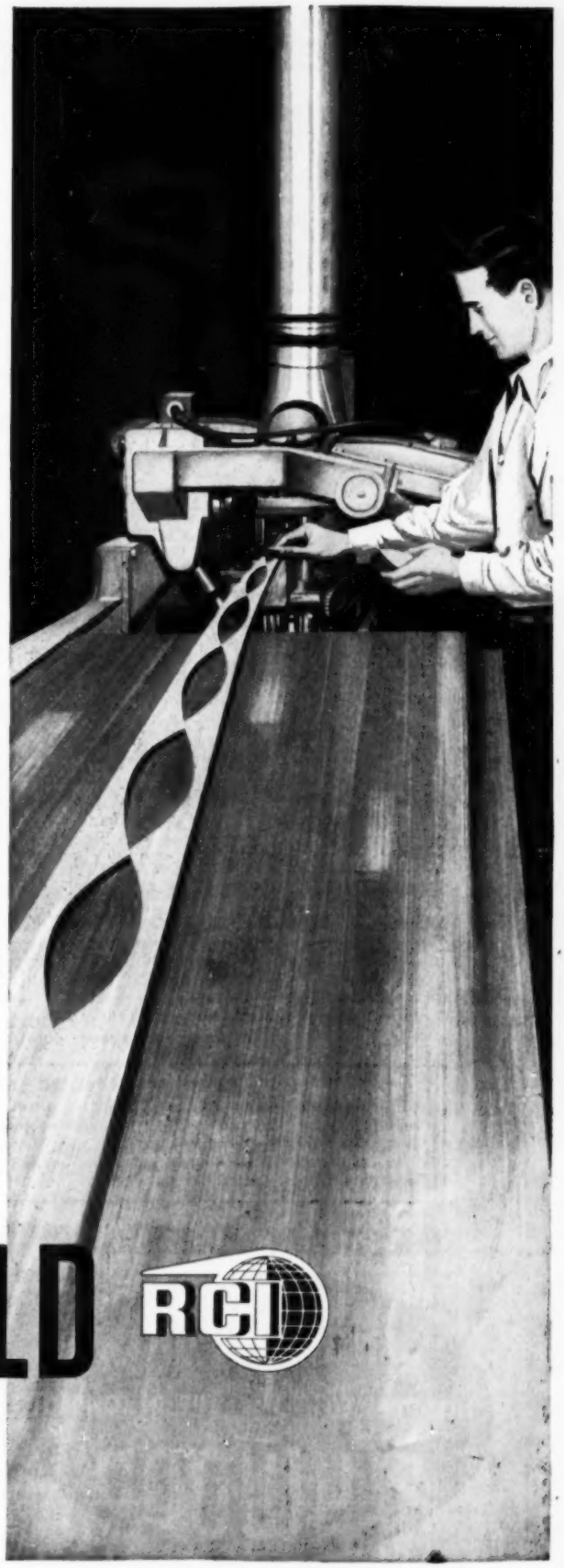
Sodium Sulfate • Sodium Sulfite



ject to necessary engineering and production techniques to meet specific operation requirements.

The new method is based on a chemical reaction between the applied coatings and sulfur dichloride vapor instead of the commonly accepted polymerization or oxidation. Tests show a reduction in drying time from 24 hours to 2 to 20 seconds.

Coated material resulting from roller coating, brushing, spraying or dipping operations is conveyed into a chamber through which a mixture of sulfur dichloride vapor and air is circulated. The machine removes vapors adhering to the material, and all air exhausted from the system is scrubbed with dilute caustic soda solution to remove any remaining vapor. There is no appreciable effect on the wood.

The machines can be built to accommodate any size object, and the coating is superior in uniformity to that of air dried film.

RESEARCH

Forest Products Research Asked

Intensified research in the forest products field is indispensable to future growth of upper Michigan's economy, according to Aarne E. Ervast, upper peninsula field representative for the Michigan Economic Development department. Speaking before the Forest Industries Information committee of Wisconsin, Michigan and Minnesota, Mr. Ervast called on educational institutions and private industry to join hands in conducting such research.

Mr. Ervast pointed to the countless undeveloped opportunities in such lines as dimension stock, boxing and crating, housing, laminated turnings, shoe heels, manufactured wood doving materials, industrial bench and table tops, resin bonded wood particle boards, furniture and furniture parts, novelties and woodenware and wood briquettes. He also stressed the importance of improved marketing techniques for full development of wood using industries.

New Testing Machine at VPI

A new type electronically controlled testing machine, to be used especially for research on fastening wood and particularly on nailing and stapling wood, has been installed in the Wood Research laboratory at Virginia Polytechnic Institute.

Purchased with funds from industries which have beeen served by the laboratory, the machine has a capacity of 12,000 lbs. and a sensitivity of 1/10 lb. It is provided with an automatic electronic recorder to produce stress-strain curves at magnifications from 1:1 to 1000:1 by the turn of a switch.

EDUCATION

Maine Forestry 50 Years Old

The University of Maine observed the 50th birthday of its forestry department October 1-3 with a university convocation, several technical sessions and addresses by several national authorities. The occasion was also the 40th anniversary of the establishment of the school's courses in pulp and paper, the university's Pulp and Paper Foundation holding its third annual open house as an added activity.

Forestry Career Made Easier

A cooperative education program for the training of forestry students has been worked out by the North Carolina State College school of forestry and Western Carolina College. Students at the latter college who have completed certain courses of study will be permitted to transfer

JAMESTOWN
Specials

SPECIALLY ENGINEERED cut-to-size KITCHEN CABINET DOORS—Always have been and still are GUARANTEED FOR QUALITY.

BAL-CO-PLY non-warping door stock—engineered for cabinets and furniture parts that require a practically WARP PROOF plywood.

JAMESTOWN A GRADE BIRCH—skillfully matched for grain and color.

JAMESTOWN NORTHERN RED OAK—we select and cut our own veneers.

JAMESTOWN CHAUTAUQUA COUNTY NATURAL Hard White Maple.

. . . also WALNUT, MAHOGANY, RIFT and PLAIN WHITE OAK, CHERRY as well as other NATIVE and EXOTIC woods.

any of the above in all standard thicknesses with lumber, fir or veneer core.

PRIDE & PLYWOOD

Commodities of all kinds are offered at prices ranging from the sublime to the ridiculous. Plywood is no different than other commodities in this respect.

We feel that the consuming public still wants the BEST and takes real PRIDE in ownership of the BEST.

JAMESTOWN VENEER and PLYWOOD CORP.
Jamestown 2, N. Y.

JAMESTOWN
HOT PRESSED Multiplied Strength RESIN BONDED
PLYWOOD

minimum prices may be had on quantities of 100 of size and kind, in truckload or carload lots.

NOW!

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3026*

a basically improved and approved resin glue

more PLUS Features

- **SHORTENS ASSEMBLY TIME.** Assemblies can be passed through all subsequent operations after a clamping period of only 15 to 20 minutes. Reduces costly delays in assembly lines and spray booths.
- **LOWER CLAMPING PRESSURES** produce high strength with as little as 10 psi—as proven by impartial tests. Reduces jig and case clamp costs; also clamping and releasing time.
- **HIGH HEAT RESISTANCE.** Unlike ordinary polyvinyl acetates, WOOD-LOK's patented copolymer has been designed to resist the higher temperatures encountered in modern forced baking of wood finishes.
- **STRONGER BOND** coupled with high initial strength permits prompt handling of assemblies. Saves hours. No need to wait for glue to cure.
- **ALWAYS READY FOR USE.** No costly labor for preparation. No wastage due to hardening in glue pots.
- **FASTEST SETTING WOOD-LOK 3026** is unaffected by changes in temperature. Eliminates hot glue pots. Produces uniform setting regardless of shop temperatures.
- **GREATER VERSATILITY.** WOOD-LOK, which is unexcelled for the manufacture of case goods, is also unexcelled for laminating plastic/plywood dinette tops, gluing flush doors, and gluing composition and synthetic woods.
- **FULLY TESTED.** In production, as well as independent laboratories. Full details and copies of test results are available upon request. National's technical service is always available to you.

Freeze-Thaw Proof

WOOD-LOK 3026 is not affected by repeated freezing and thawing in shipment or storage.

This special, fast setting vinyl copolymer can be shipped anywhere—anytime.

Now you need never switch to slower, less efficient and less durable glues in the winter months.

WOOD-LOK 3026 insures year 'round, uniform, fast production.

RESYNS®
National
ADHESIVES

Address: 270 Madison Avenue, New York 16; 3641 So. Washtenaw Avenue, Chicago 32; 735 Battery Street, San Francisco 11; and other principal cities.

YES! **I'd like to test National's new improved and approved WOOD-LOK 3026. Please send:**

☐ 5 gallon container. Bill me at the quantity drum price.
☐ Have a National representative call.

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

**If you already use WOOD-LOK you will continue to receive your present WOOD-LOK until we are instructed to change to WOOD-LOK 3026.*

to the State College forestry school without loss of credit.

The plan was a cooperative effort by Dr. Richard J. Preston, School of Forestry dean at State College, and President Paul A. Reid of Western Carolina College. Dr. Preston emphasized the demand for trained foresters by stating State College could place five times as many forestry graduates as it has available.

FORESTRY

Advisors Aid Resource Parley

A number of representatives of the forest products industry and friends of forestry are serving as members of expert advisory groups named to help plan and conduct the Mid-Century Conference on Resources for the Future scheduled December 2-4 in Washington, D. C.

Included on the "patterns of cooperation" steering committee are Clyde Martin, chief forester for Weyerhaeuser Timber Co., and Karl Frederick, Rye, N.Y., lawyer who is a director and chairman of the executive committee of the American Forestry Association. Mr. Martin is also a director of American Forest Products Industries.

Among those serving on the steering committee on competing demands for use of land is Julian McGowin, secretary of the W. T. Smith Lumber Co., Chapman, Ala.

Few Forest Fires in Northwest

Barring an unexpectedly bad fall fire season, the Pacific Northwest can post an all-time record in 1953 for fewest acres burned by forest fires. Not since man has kept records have Washington and Oregon had such remarkably low losses.

Through the end of August Oregon fire losses on state and private lands were only 803 acres. Washington burned only 740 acres in the same period, but a 1,000-acre fire in mid-September marred its record. Unusual is the fact that lightning fires almost equaled man-caused blazes which usually run 9-1 over lightning.

Pulp Mills Boost Planting Pace

Michigan, Minnesota and Wisconsin pulp mills will plant 5 million trees a year on their own lands during the next decade, or 50 million trees in all on 50,300 tax-paying acres, according to the American Pulpwood Assn.

Along with the increased tree planting tempo in the Lake States, a striking increase is noted in number of forestry personnel employed in woodlands management—from 50 in 1945 to 121 today.

COMING EVENTS

Nov. 3: Great Lakes Section Meeting, FPRS, Rowe Hotel, Grand Rapids, Mich.

Nov. 3-4-5: Annual conference, Packaging Association of Canada and Exposition, Toronto, Canada.

November 4-6: Seventeenth Annual Time and Motion Study and Management Clinic, Sheraton Hotel, Chicago.

Nov. 5-6: Northeast Section Meeting, FPRS, Yale U., New Haven, Conn.

Nov. 9-10: Deep South Section, FPRS, annual meeting, Angelina Hotel, Lufkin, Tex.

Nov. 12-13: Midwest Section Meeting, FPRS, Chicago.

January 25-28, 1954: Plant Maintenance & Engineering Show and Conference, International Amphitheatre and Hotel Conrad Hilton, Chicago.

March 4-5, 1954: Eastern Canadian Section Meeting, FPRS, Chateau Laurior, Ottawa, Canada.

May 5-7, 1954: National Meeting, FPRS, and Woodworkers Industry Show, Grand Rapids, Mich.

Horner Flooring Co., Dollar Bay, Mich. One man can move kiln loads with a Moore Bobtrailer

MOORE BOBTRAILER
+ MANUAL CAR
= POWER TRANSFER CAR
at lowest cost

Add a Moore Bobtrailer to your transfer car and:

1. Move loads in and out of kilns
2. Move transfer car along runway track
3. Move loads on and off transfer car
4. Eliminate stopping crew to move loads

The Moore Bobtrailer can be powered by gas engine or electric motor —fits end or cross-piled cars. Write for information—do it today.

MOORE DRY KILN COMPANY
Oldest and Largest Manufacturers of Dry Kilns and Veneer Dryers
JACKSONVILLE FLORIDA · BRAMPTON, ONT. CANADA · VANCOUVER, B. C. CANADA · NORTH PORTLAND OREGON

MATTISON 276 MOULDER

- **REDUCED COST ON FITTING AND SANDING OPERATION**
- **SUBSTANTIALLY IMPROVED QUALITY OF MOULDING WORK**

FOR

IMPERIAL FURNITURE COMPANY

Operator

FINDS MATTISON 276 . . .

- **Easy to set up**
- **Stays put**
- **Vertical and cross adjustment of Cutterheads are made quickly and positively**
- **Outboard bearings eliminate vibration in heavy cuts**
- **Attached wrenches simplify setting of guides**

IMPERIAL FURNITURE COMPANY
Imperial Tables
GRAND RAPIDS 2 · MICHIGAN

March 18, 1953

Mattison Machine Works
Rockford, Illinois

Gentlemen:

Early this year, we installed one of your No. 276 Heavy-Duty High Speed Electric Moulders. We thought you might like to know how we are getting along with this machine.

Here at Imperial, we manufacture a complete line of high grade tables, and the moulder work must be as nearly perfect as possible to reduce our sanding and fitting operations. With the addition of this Mattison No. 276, the quality of our moulded work has improved substantially while our costs have gone down.

Our operators find this Mattison No. 276 very easy to set up, due to the accessibility of all the adjustments and controls. Vertical and cross adjustments of the cutterheads are made positively and quickly, and the hand locking wrenches which are attached to the machine simplify setting of the guides. Another feature is that it "stays put", which is no doubt due to the rigid construction, precision manufacture, and advanced engineering design. The outboard bearings eliminate vibration in heavy cuts, and we believe that any high speed moulder spindle should have an outboard bearing.

We are confident that this machine will continue to perform efficiently for a great many years.

Yours very truly,

IMPERIAL FURNITURE COMPANY

A. F. Christy

A. F. Christy
Plant Manager

- Imperial Furniture Company's reputation for building a high quality line of tables is in a good measure due to precise fabrication methods which insures consistently accurate results and proper fitting of all parts. Mr. A. F. Christy, Plant Manager of Imperial, has been around the woodworking industry for a good many years and knows what he wants and has to have in the way of production and accurate results. The above letter telling of his experience with the Mattison 276 Moulder is an example of what this machine is doing for a good many others. For complete information on the Mattison 276 High Speed Electric Moulder, ask us to send you our latest free circular.

MATTISON MACHINE WORKS
ROCKFORD · ILLINOIS

LEADERSHIP IN THE PLANER MATCHER FIELD SINCE 1907

This Trade Mark

ON MACHINES IN YOUR PLANT MEANS

HIGHEST PRODUCTION
MAXIMUM QUALITY
LOWEST PRODUCTION COST

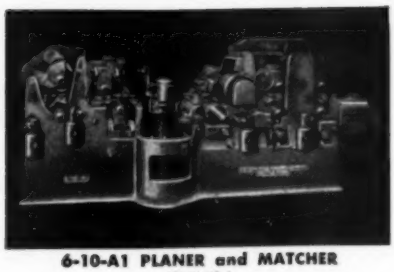
THE most profitable planing mills in operation today are those planned for continuous straight-line production and minimum lumber handling. The heart of such a production line is a quick-change, fast feed modern planer and matcher that produces finely machined lumber—and does it a full 8 hours per shift. There is no place in *today's* planing mill for the machine that ties up production a half hour or more each time a pattern is changed.

New machine developments during the last 20 to 25 years have made the equipment of an earlier era obsolete—*obsolete long before it is worn out.*

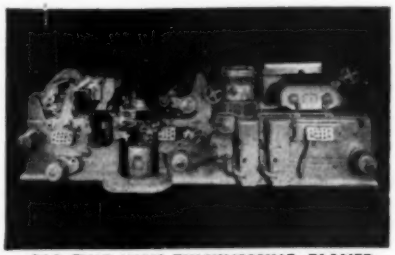
If you are using ancient machines in your planing mill just because they aren't *worn out* yet, we suggest that you honestly compare the equipment you are now using with the available new equipment on the market. Then, determine how much this obsolescence is actually costing you.

We believe you will be agreeably surprised at the many *years-ahead* features found in Stetson-Ross cost-reducing planing mill machines.

You are invited to submit planing, trimming or handling problems for our recommendations without obligation. FREE ON REQUEST: *Your copy of "A B C's of Planing Mill Layout."*

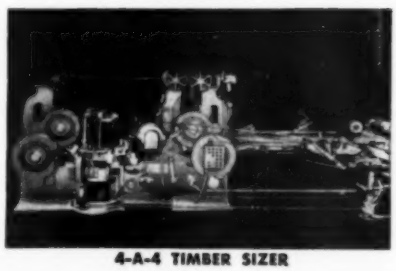


6-10-A1 PLANER and MATCHER
(8 Knife)

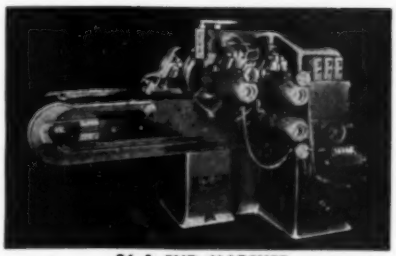


202 TWO-WAY THICKNESSING PLANER and MATCHER
(14 Knife)

6-12-C1 PLANER AND MATCHER
(14 or 16 Knife)

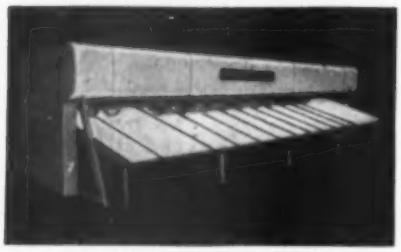


4-A-4 TIMBER SIZER

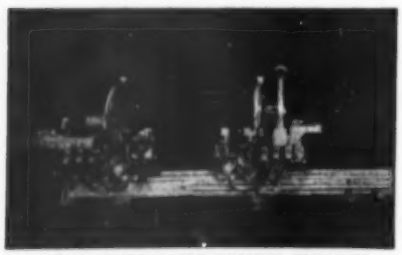


36-A END MATCHER

TRAVELING APRON DECK-CONVEYOR 603-E UNLOADER HOIST



T-33 RANDOM LENGTH TRIMMER
with built-in top and bottom dust removal system



WT-65 AUTOMATIC BUNDLE TRIMMER

T-18 CUT-OFF SAW

STETSON-ROSS MACHINE COMPANY

SEATTLE 4, WASHINGTON

EXPORT DIVISION: 301 CLAY ST., SAN FRANCISCO 11, CALIFORNIA

Let air give your production problems a lift

Yes, let the tireless muscles of *air power* do your heavy work for you—let *air* be the force for pushing or pulling . . . lifting or lowering . . . opening or shutting in your plant.

Air is quick . . . convenient . . . and it will save you money, too. Try Schrader Air Cylinders to give you that push . . . or pull . . . or push and pull smoothly, quickly, and with less work than any other method you've ever tried.

Yes, Schrader Air Cylinders are ideal for any application where you need straight-line forces for any distance from inches to feet . . . at forces from less than 20 pounds to over 5,000 pounds.

So, wherever you need a healthy push—or a light shove—whether it's for moving wood into a saw blade or for opening the door to a storage bin, see if Schrader Air Cylinders can't help you do the job better...faster.

We'll be glad to give you specific help for your particular plant, if you'll just write, outlining the processes you use in your plant—or fill out the coupon below. You'll be delighted to see what an immense boost air can give your production.

Schrader
REG. U. S. PAT. OFF.

products

control the air

Air Cylinders • Operating Valves • Press & Shear Controls • Air Ejection Sets • Blow Guns • Air Line Couplers • Air Hose & Fittings • Hose Reels • Pressure Regulators & Oilers • Air Strainers • Hydraulic Gauges • Uniflare Tube Fittings

Mail This Coupon Today

A. SCHRADER'S SON
Division of Scovill Manufacturing Company, Incorporated
480 Vanderbilt Avenue, Brooklyn 17, N. Y., Dept. Y-14

I am interested in more information on.....

Name_____ Title_____

Company_____

Address_____

LETTERS to the EDITOR

"What Basis Jitters?"

Editor, WOOD & WOOD PRODUCTS:

I certainly want to congratulate you for the excellent editorial, "What Basis for the Jitters?" in the October issue. I would like to get a few reprints to send to some of my friends.

We certainly think that this editorial hits the nail on the head. As one of my salesmen said to me this morning when I showed it to him, it means that we have just got to go to selling. Of course, it also means that competition is here now and we have to face it and put out more effort for each order that we receive. I want to thank you for writing such an excellent editorial.

—L. N. Bagnal,
Winston-Salem, N. C.

Glue Setting Time

Editor, WOOD & WOOD PRODUCTS:

We are informed by Mr. Jon. Titcomb, manager of the Weyerhaeuser Springfield plant, that his high-frequency dielectric press sets the glue in a press-load of lumber in 20 seconds. The time of slightly less than one minute mentioned in your article (see page 20, September WOOD & WOOD PRODUCTS) includes the time involved in handling stock to unload and reload the press.

—M. D. Preston, Peeco Corp.,
Los Angeles, Calif.

Georgia Tech Seeks Help

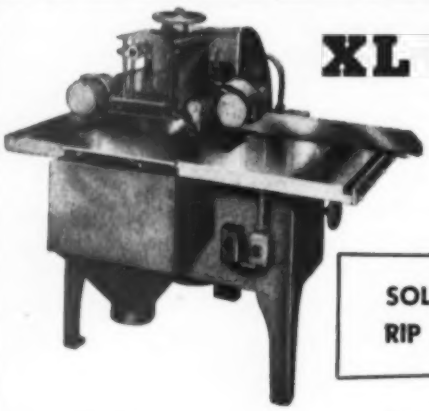
Editor, WOOD & WOOD PRODUCTS:

In our Material and Technique course, which is a required course for all industrial designers, we like to familiarize our students with the possibilities and limitations of various materials and their forming methods.

In the coming term the students will design objects which in part or whole incorporate: (A) Standard wood molding and special molding; (B) Automatic wood turning parts.

I am looking for companies with which I could correspond in order to gain essential data and literature on the above subjects.

—H. Bredendieck
Georgia Institute of Technology,
Atlanta, Ga.



XL RIPPER

SOLVES POWER FEED RIP SAW PROBLEMS

HERE'S HOW

★ **PERFORMANCE** — Day-in day-out trouble free production with the choice of single-blade ripping, or gang setup. Every bit of power developed by the direct drive saw motor is put into the cut.

★ **DEPENDABILITY** — Complete simplicity of design—only 10 moving parts in the entire feed mechanism, compared with more than a hundred in other makes of power-feed rip saws. Less parts—less maintenance. Only 10% as many parts —1/10 as much possibility of a breakdown.

★ **SPEED**—Four feed speeds — 30-75-120-190 feet per minute.

★ **ECONOMY**—Initial economy because of the low purchase price. Minimum repair bills. One user reports that he has spent only $4.10 for repair parts after running his RIPPER 16-24 hours a day for more than four years — over 16,000 hours!

★ **VERSATILITY** — Choose for your own specific requirements from the two 10 HP models or the 20 HP model. The RIPPER "fills the bill" as the most desirable power-feed rip saw you can buy.

Write, Wire or Phone

SMITHWAY MACHINE CO.

4617 Airport Way — Seattle, Wash.

Likes FPRS Publicity

Editor, WOOD & WOOD PRODUCTS:

I have just received the October issue of WOOD & WOOD PRODUCTS and wish to acknowledge gratefully the very fine publicity which you are giving to the work of the FPRS and to its people. As I have said before, I feel that your magazine has become greatly strengthened.

—Frank J. Rovsek, Exec. Sec.
Forest Products Research Society

Reprints for General Box

Editor, WOOD & WOOD PRODUCTS:

It was surely a very nice article which you ran in the October issue regarding our kiln-drying operation in Louisville. We very much appreciate it and would like, if possible, to have 200 reprints.

—General Box Co.
Des Plaines, Ill.

Can Research Alone Do It?

Editor, WOOD & WOOD PRODUCTS:

WOOD & WOOD PRODUCTS, I believe, should be commended for the excellent editorial which appeared in the September, 1953, issue, Research and development are necessary; however, as your editorial suggests, there is an urgent need for an industry-wide promotional program.

—R. L. O., Va.

Permission Granted

Editor, WOOD & WOOD PRODUCTS:

We have taken note of your editorial in your September, 1953, issue, which editorial we would like to duplicate in our Weekly Bulletin published and forwarded to our membership. We think the article is timely and well written.

—Greater N. Y. Lumber Industries.

Likes "Wood's" Quality

Editor, WOOD & WOOD PRODUCTS:

We would like to receive tear sheets of the first 10 articles on veneer by Thomas D. Perry which have been appearing in your magazine.

You can well be proud of the high quality of material which you are publishing in WOOD & WOOD PRODUCTS.

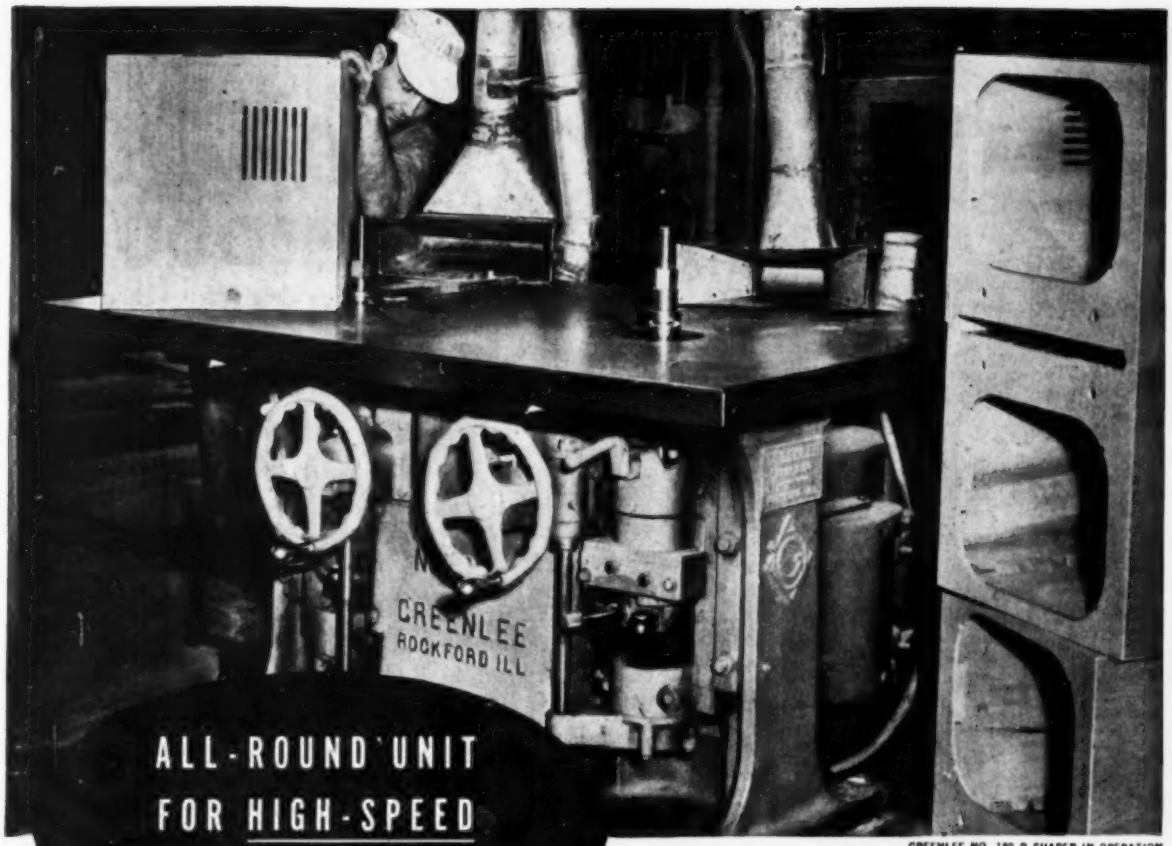
—D. D. F., Calif.

Casting Resins

Editor, WOOD & WOOD PRODUCTS:

I would appreciate obtaining names and addresses of firms making the casting resins discussed in your August issue by Thomas Dickinson.

—M. L. S., Wis.



GREENLEE NO. 180-B SHAPER IN OPERATION AT IGLOO CABINET CO., CHICAGO, ILLINOIS

ALL-ROUND UNIT FOR HIGH-SPEED PRECISION SHAPING

... *Greenlee 180-B Motor Driven Shaper*

Here's the *double-spindle* Shaper that you find speeding production in so many leading woodworking plants today.

Its size, spindle spacing, and design for extremely high spindle speeds, makes the GREENLEE ideal for high output of light or medium-heavy work. And its belted-motor-driven feature eliminates need for a separate frequency changer.

Since the success of any shaper depends mainly on its spindles, all GREENLEE Shapers have spindles that are designed for maximum strength and rigidity. Of alloy steel, scientifically heat-treated, they are capable of withstanding hard shocks and stresses and still maintain their original fine balance. Equipped with precision ball-bearings, they operate at high speed with maximum smoothness.

Rugged frame construction, proper table design, highest quality materials and fine craftsmanship throughout, all combine with the other many features to make this an outstanding machine of excellent reputation.

For accurate, high-speed shaping and long-time, trouble-free service, investigate the GREENLEE No. 180-B Double-Spindle Shaper. Write today for complete specifications . . . ask for Bulletin No. 180-B.

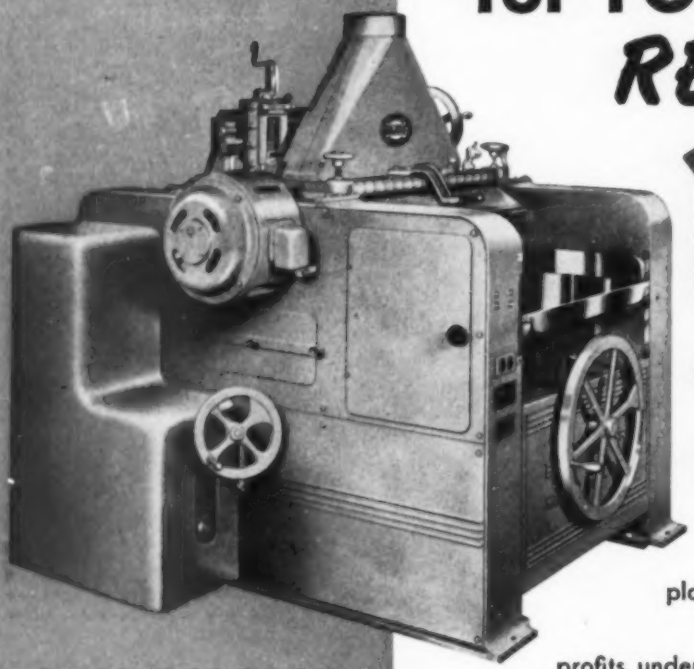
Greenlee Bros. & Co., 1931 Twentieth Ave., Rockford, Illinois.

MACHINERY & TOOLS
GREENLEE

GREENLEE WOODWORKING MACHINERY: MORTISERS · BORERS · SAWS · TENONERS · PLANERS · SHAPERS · MORTISING & BORING TOOLS

for PLANNED Price Advantage for YOUR PRODUCT

REPLACE with BUSS CABINET SURFACERS



BUSS MODEL 4-L

Buss Model 4L, 24" to 30" x 8" Single Surface Cabinet Planer. The line contains single and double surface types to suit every production set-up, including the surfacing of rough lumber.

For far-sighted management that is planning and retooling to assure a price advantage for its products and normal profits under highly competitive conditions, replacement of older planers with modern-to-the-minute BUSS Cabinet Surfacers constitutes one of the best equipment investments that can be made.

These machines give you finest finished planing at three to four times the speed of older machines . . . cut set-up and change-over time as much as 60% . . . provide for grinding and jointing knives with perfect accuracy in just a fraction of the time formerly required, and incorporate numerous exclusive features that guarantee years of continuous, uninterrupted service with almost negligible amount of maintenance. Consult us on your planing requirements. There's a BUSS Cabinet Surfacer to exactly fit your production set-up. Write for descriptive bulletins.

PRECISION BUSS PLANERS

BUSS
SINCE 1862
MACHINE WORKS

PLANER SPECIALISTS EXCLUSIVELY

344 EIGHTH ST. HOLLAND, MICHIGAN

How Much Is .266%?

We've been looking at some studies of advertising expenditures by industries. Frankly, we're not happy with our findings. They don't show the wood industry to advantage. That's not surprising, because the wood industry has never been what you'd call "promotional minded." There's been a lot of talk about lost or slipping markets, but relatively little action.

The Frampton Committee program? Definitely a step in the right direction, but it's not a *marketing* program. It's a research program, aimed at improvement of wood and the development of new wood products. But the superior qualities wood has in its favor — higher intrinsic beauty and value, greater serviceability, more attractive, more satisfactory, easier-to-live-with features, when compared to similar products made of competitive materials — don't need research so much as they need promotion.

As Representative Ellsworth of Oregon told the annual meeting of FPRS last June, "there are basic facts about the superiority of wood in a lot of uses, but who ever read of them in a national advertising campaign? You have no trouble finding well-financed advertisements extolling the superior qualities of almost anything except wood."

Tune in your radio or television set and the same conclusion is evident. Plenty of advertising and propaganda for aluminum, steel, plastics, and innumerable products made from those materials — but when do you hear or see anything about wood and wood products?

Look at the figures for advertising expenditures by industries. Apparently the wood industry as a whole has not yet awakened to the vital lesson its competition has learned and is regularly applying — that advertising is one of the prime essentials of business success in the American way of life. If you want to sell today — to insure your position in the market place — you must *tell* people what you have to offer and why it's the thing for them to buy. It need not be *perfect* to be saleable — nothing ever is.

How much importance does the wood industry attach to this vital business function? It averages a little better than ¼ of 1% of sales for advertising — .266%, to be exact! Compare this with fabricated metal products — .895%; or with stone, clay and glass products — .68%; or with chemicals and allied products (including plastics) — 2.85%, more than 10 times wood's figure. Run down the list and you find only one of America's 17 leading industries — primary metals, .235% — with a lower figure for advertising than that of the wood industry.

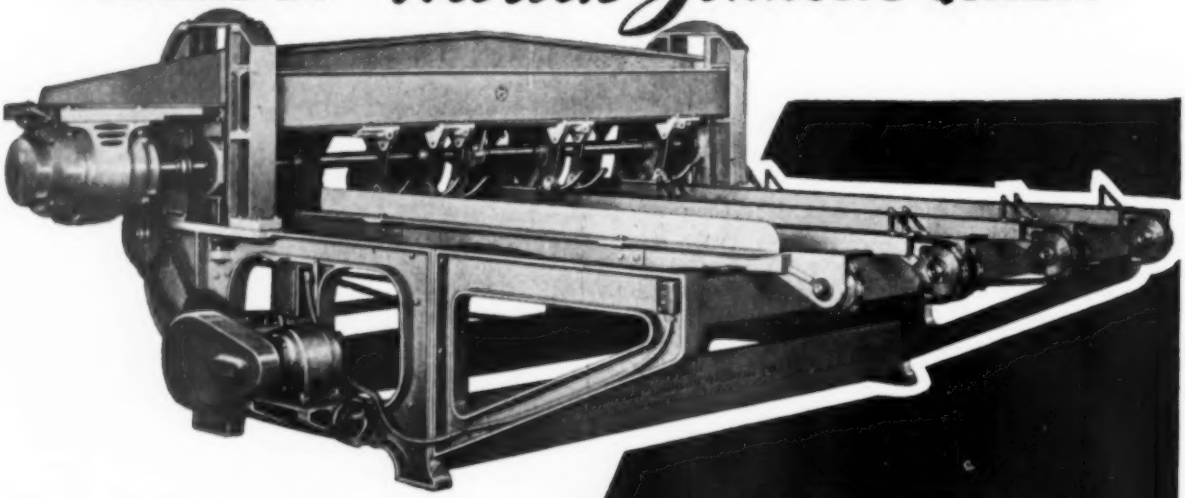
How can the results be better than they are when the wood industry fails to understand how vital a force advertising and promotion can be in the fight for markets? Research alone cannot do the job. With competition getting more formidable every day, the wood industry must soon recognize and take action to meet the need for a national promotional program to tell and sell the facts about wood's advantages — not one wood in competition with another, but wood as a superior material. As we have said here before, this vitally important all-industry job cannot be postponed much longer. There's no future without markets.

What do YOU think?

(Comments, and inquiries regarding distribution of reprints of this message to employees and others, are invited.)

A Tremendous VARIETY of Uses...

BACKED BY Mereen-Johnson QUALITY



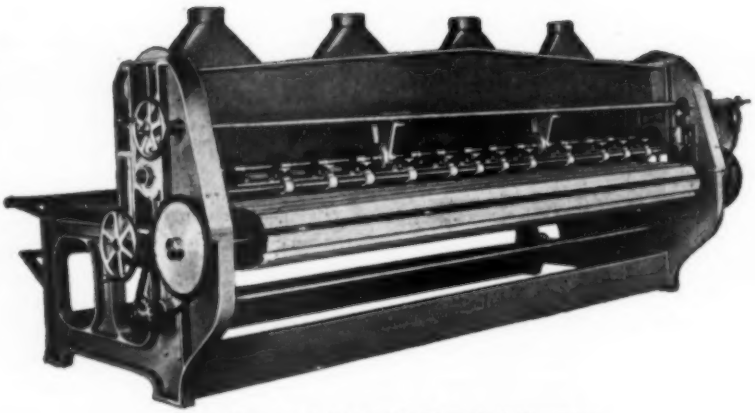
NO. 435

MULTIPLE CUT-OFF SAW EQUALIZER *and* GROOVER

IT'S BEST KNOWN AS A PLYWOOD SIZER. But this Mereen-Johnson machine has earned popularity in sash and door, furniture, cabinet and refrigerator factories, too. It will cut up long boards into short, accurate pieces . . . handle boards, panels or sheets of any size—cutting them perfectly square on both ends . . . cut any number of grooves of nearly every width on the same stock. It will even do these three operations *simultaneously*.

Special accessories permit its use for cutting multiple veneer, plywood and insulating material. It is often used as a slat bed cut-off and ripper . . . for dry saw cutting . . . for two-way cutting . . . and for grooving and trimming step-ladder sides.

Sizes run from 4′ to 24′. Let our engineers work with you to develop a combination unit that will fit your needs.



Rear View of 144x48 Slat Bed Machine

Write for Bulletin No. 435

Mereen-Johnson MACHINE COMPANY

4401 LYNDALE AVENUE NORTH • MINNEAPOLIS 12, MINNESOTA

How to Make a Quality Control Program Pay Off

Four Case Studies That Demonstrate How Better Finished Goods Can Be Produced and Costs Pared

By RICHARD C. CALAHAN*

Article 2

DEPTH of hinge seat borings is checked at machine and quality control data posted to guide operator and foreman

PROBLEMS ARISING in applying statistical quality control techniques to the furniture manufacturing industry offer a real challenge to an imaginative quality control engineer. Certainly the trend toward making furniture finishing a science rather than an art holds promise in reducing finishing quality characteristics to measurable quantities.

At present, the use of cost and production charts would seem to have the most logical approach. Considerable thought is developing toward techniques to take the emotion out of visual inspection and to reduce it to a scientific endeavor.

Before launching a quality control program a tremendous amount of planning is mandatory. Ways and means must be found to sell the quality control ideal to management and workers alike. And finally, rather than hamper the production departments, it must become a part of *their* thinking and *their* creed.

The case for statistical quality control techniques can best be reported by actual case histories. Application of these techniques during the past two years has convinced me they hold great promise. There is little doubt they can bring many of the spectacular quality improvements and cost reductions they have brought to other industries.

The following examples were selected to illustrate that statistical quality control techniques are applicable to problems in furniture manufacturing. They emphasize, not the mystical connotation frequently given to statistical endeavors, but the fact that these statistical techniques represent a sound, logical and realistic approach to a quality problem.

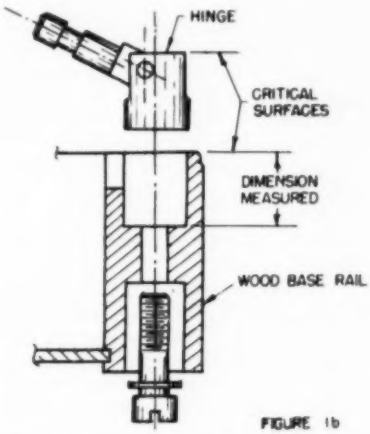


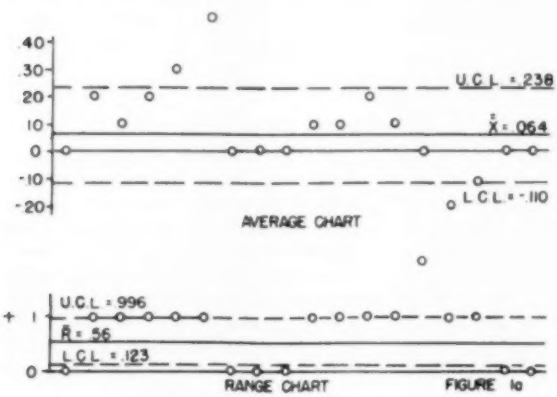
FIG. 1b (above) shows exploded view of hinge seat

Case Study One

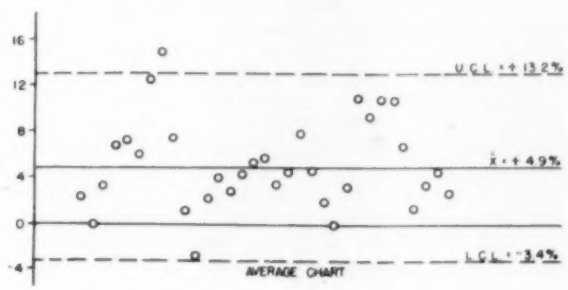
To present a satisfactory appearance and to prevent hinges on sewing machine cabinetwork from snagging the material being sewn, it has been a long standing inspection requirement that such hinges must be flush to 1/64 in. below the adjacent surface.

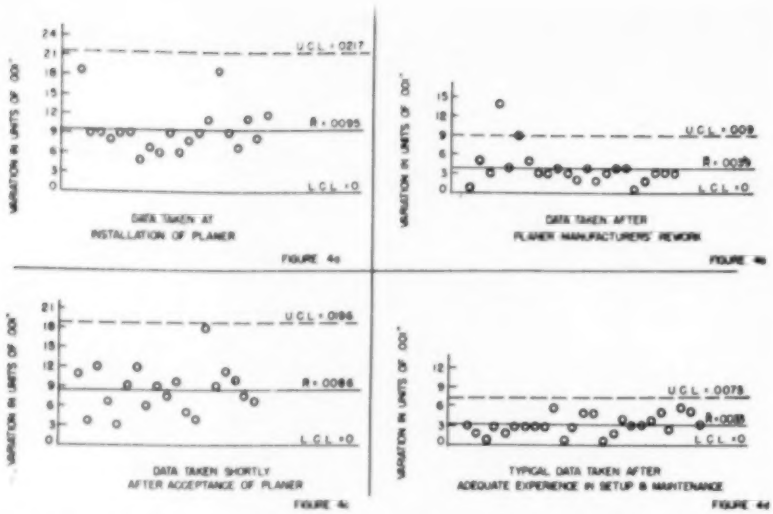
The exploded view of Figure 1-b shows the nature of this hinge seat on portable sewing machine bases and the barrel type hinge used. When

*Asst. Superintendent, Inspection Dept., Singer Mfg. Co., South Bend, Ind.



LEFT—Fig. 1a shows process average is well above zero, indicating need for frequent shimming of hinges. FIG. 2 (below) shows supplier "A" gave 5% extra value




UCL = .0217
R = .0095
LCL = 0
DATA TAKEN AT INSTALLATION OF PLANER
UCL = .009
R = .0039
LCL = 0
DATA TAKEN AFTER PLANER MANUFACTURERS' REWORK
UCL = .0086
R = .0066
LCL = 0
DATA TAKEN SHORTLY AFTER ACCEPTANCE OF PLANER
UCL = .0075
R = .0038
LCL = 0
TYPICAL DATA TAKEN AFTER ADEQUATE EXPERIENCE IN SETUP & MAINTENANCE

RANGE CHART story—Figs. 4a to 4d—of improved control over thickness variations within core by finishing planer operators

some of these bases were "trimmed" at one of our plants, a letter of complaint on the varying depths of this boring spotlighted the problem.

For years, two thicknesses of fibre washers had been furnished at the assembly stage to shim under these hinges! This problem appeared to be suited to study by statistical quality control methods and was adopted as one of several trial installations set up to sell the entire quality control program to management.

A sampling inspection was set up at the boring operation measuring the depth of hinge seats on ten successive bases approximately every half hour. When 20 such series of observations (subgroups) had been made, the average line, the average range and three sigma control limits on range and averages were calculated. This initial control chart is shown in Figure 1-a.

All measurements were taken in increments of 1/64 in. The specified depth of boring is shown on all charts as zero and deviations therefrom in decimal parts of 1/64 in. It will be noted in Figure 1-a that the process average is centered well above zero indicating the need for frequent shimming of hinges.

At this point, the problem, as evidenced by the complaint letter, and the quality control inspection approach to be used, was fully explained to the operator (who by this time was quite curious).

This proved to be a wise move, for quickly it became apparent that because of the age of the equipment being used, the problem was essentially one of operator influence. The control chart was posted and maintained at the boring machine. It was pointed out to the operator that the chart would show the good work he did as well as the bad work.

From the data taken approximately ten days later, it was apparent that the performance on this specific quality characteristic—the depth of boring—had been greatly improved. The process average more closely approached zero and the width of the control limit band had decreased indicating an improved state of control.

The average range also decreased, indicating less variation within the subgroup of ten parts—the result of improved operator performance in this case.

The use of washers for shimming purposes was virtually abolished and, in the past year, only very rarely has it been necessary to do any adjustment in the seating of these hinges.

The amount of sampling inspection was reduced first to an hourly check, then four times a day, then twice a day, then once a day and now is done about twice a week! Likewise the subgroup size has been reduced from ten to four pieces.

Case Study Two

For years, each shipment of lumber purchased was inspected upon receipt for grade and footage. Because of the diversity of usage of lumber, neither the grade nor the footage were, individually, of prime importance. The interrelation of grade and footage as it affected the dollar value of the shipment, was the "quality characteristic" being studied. The comparison then, of the shipment value, as determined by the receiving inspection, to the invoiced value was of primary importance.

Upon the installation of complete new lumber handling and drying facilities, the possibility of a sampling inspection of carloads of lumber was suggested.

The past performance of each supplier—received value versus invoice value—was carefully scrutinized. It was found that sufficient data existed (20 shipments within a span of a couple of years) on five suppliers, whose past performance merited the confidence, to set up a sampling inspection system.

Figure 2 shows the performance record of Supplier "A". For purposes of clarity, the data is shown as a percentage relationship between the value differential of the receiving inspection value and the invoice value as compared to the invoice value. Thus, it can be seen that Supplier "A" has a record of furnishing on the average, about five percent more dollar value than was charged.

The chart shows a rather wide dispersion of data, probably indicating that the supplier's inspection is somewhat erratic. However, in view of the obvious attempt to give more dollar value than charged, a plan was adopted with Supplier "A" of inspecting every third shipment.

The last four points on the chart represent five shipments inspected since the inspection of the plan. It is apparent that the process is operating within the control limits and thus points can be expected to range from 3.4% to 13.2%, 99% of the time. Consideration is being given to reducing the sampling to every fourth carload shipment.

This application of statistical quality control has been in operation for about one and one half years. In the first year, the cost of the inspection of 35 carload of lumber was saved. Data is being kept on all other suppliers not now under the plan with a view towards adopting further sampling plans. The great value of such a program as this as a guide to a sound purchasing policy is, of course, obvious.

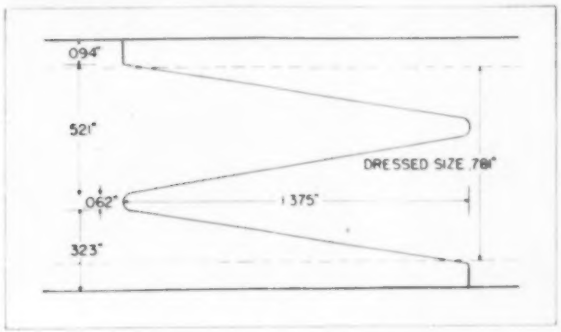
Case Study Three

The installation of new lumber handling, and drying facilities and a new rough dimension line was accomplished during the early stages of our quality control program. These installations prefaced the installation of hot pressing techniques in the veneer laying operations.

The installation of statistical quality

Continued on Page 69

FIG. 1—End joint of 1 in. board as viewed from edge. Dotted lines show how top and bottom truncations will be removed when dressed to 25/32 in., leaving a 1:6 scarf joint at each surface



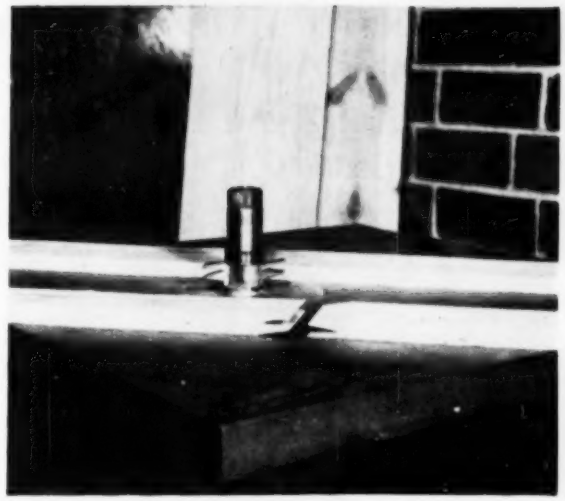


FIG. 2—Two-winged solid cutter used in making end joints. Unassembled joint in foreground; glued-up joint to right and rear

New End Joint Method Broadens Market for Short Pieces

Strength, Uses, Design and Cost Data Revealed; Also Cutting and Gluing Methods and Curing Time

EVERY DAY THOUSANDS OF SHORT PIECES of southern pine lumber go to waste because there is no market for such sizes. On the other hand, most mills cannot produce enough large-size, high-grade material to meet the demand.

To help lumber manufacturers find the answer to this problem, the Agricultural Experiment Station of Alabama Polytechnic Institute at Auburn, Ala., has been conducting research on the production of glued-end joints. The result is a new type of joint that shows great promise of reducing mill waste through the salvaging and profitable use of short pieces. Equally promising is the vista of expanding markets for grades and sizes of lumber not now available.

The following information on design, strength and uses, as well as cost data and methods of cutting and gluing the new type of end joint is taken from a paper prepared and submitted by D. B. Richards, forester, and B. M. Cool, assistant forester, of Alabama Poly, at the 1953 meeting of the Southern Pine Association, and from a more recent supplementary report.

The new type of fingered joint, exhibited in Fig. 1, is said to combine the desirable strength properties of the scarf joint with the superior production characteristics of the fingered joint.

In kiln-dried dense longleaf pine this joint, when broken in the center of a beam, will average between 75 and 80% of the strength of clear wood. The average stress developed before rupture is actually 4.7 times the working stress assigned to the best stress grade of southern pine. In weaker specimens the wood will usually break without rupturing the joint.

Treated Wood Can Be End Jointed

Preservative-treated wood that has had the excess solvent removed can be satisfactorily end-jointed by this new method. End joints in such wood have bending strengths nearly 80% as great as that of solid wood. Some of the treated beams were saturated with water and tested wet. Preliminary results showed that with a good waterproof glue very satisfactory wet strengths were obtained.

Work has been initiated on the strength of end-jointed 1 in. lumber when laminated into nominal 2 in. lumber, such as 2 x 4's, 2 x 6's, etc. Preliminary results indicated that a strong joint averaging more than 70% of the strength of clear wood will contribute its share of strength to a glued-up member that is broken edgewise.

For example, a laminated 2x4 made from a solid 1 x 4 and a 1 x 4 with an end joint having 75% of the strength of clear wood, if placed on its edge and loaded directly over the joint, would have a strength about 87½% as great as that of a clear, solid 2 x 4.

Design work has also been completed on an end joint for 2 in. lumber. This joint is calculated to give between 80 and 85% of the strength of clear wood, but these figures still await laboratory confirmation.

The joints used in the Richards-Cool study were cut with a two-winged solid cutter mounted on a spindle shaper. The boards to be jointed were held in a simple wooden jig designed for the purpose. The joints were cut by pushing the jig past the cutterhead with the edge of the jig held against the shaper collar.

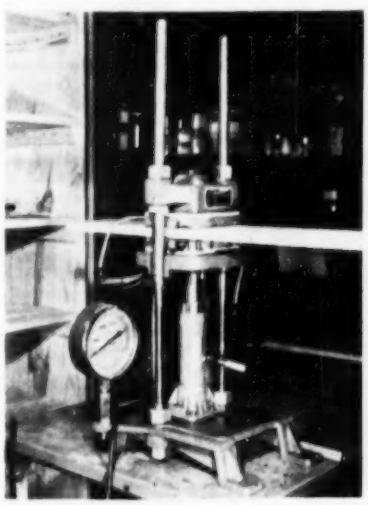


FIG. 3—Joint in laboratory hot press

FIG. 4—Electronic generation and end-jointing press used in Alabama Poly project

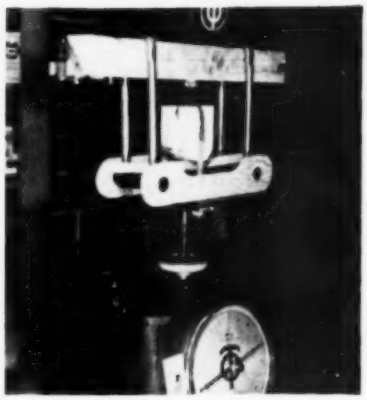


FIG. 5—Testing end joint. Small beam with end joint in center was ripped out of 1 in. board end-jointed and dressed to 25/32

No troublesome burning of the narrow tips of the cutterhead was experienced.

In production the joints could be cut on a single-end tenoner or on a flooring end-matcher with a glue-spreading attachment. Since the joint is reversible, both halves can be cut on the same cutterhead and the joint made to fit perfectly by turning one board over and pushing it endwise against the other. For a moderate rate of production a single-end tenoner may be used, while high-speed production would require a complete flooring end-matcher with a glue-spreading attachment.

Strong joints have been obtained, reports the Richards-Cool team, with resorcinal, phenolic and urea type resin glues. Most of the joints tested were hot pressed, but preliminary results indicated that satisfactory joints could be made by curing the glue for a sufficient length of time at normal room working temperature.

In either event, it is not necessary to hold end pressure on the joint. Once it has been forced together endwise, it holds its position if top pressure is applied with a press having slightly roughened surfaces, thus simplifying the design of production machinery to press and cure the joint.

To determine the length of time needed to cure one of these end joints, time studies were conducted on a small laboratory hot press and on a special electronic end-jointing press. The time required for curing varies with such factors as type of glue, temperature obtained at the glue line, and degree of cure desired.

With lumber that had been rough-dressed to ⅞ in., it took 20 seconds to cure the joint adequately for completion of the cure at room temperature. With proper control of conditions it may be possible to get adequate joint strength in a curing time of 15 seconds, but for the present more conservative estimates of the time cycle are advised when planning production schedules.

Richards and Cool report that "there seems to be a place for both hot pressing and electronic pressing in the end-jointing field."

The first and most obvious use of the new end joints is to salvage short pieces of lumber by gluing them into long pieces. Also, lengths can be made that would not be convenient for production on the usual sawmill carriage. For example, 1 x 8 boards could be end-jointed to a length of 24 ft. and then laminated into 2 x 8 rafters 24 ft. long.

Perhaps the most promising possibility, as the Richards-Cool team sees it, lies in joining short boards into long ones and then edge-gluing them into wide panels in a continuous press. These panels, 2 or 3 ft. wide and perhaps 24 ft. long, could be ripped and cross-cut to any size desired.

Production of these long, wide panels also would reduce the cost of manufacturing commercial laminates of standard form. For example, 60 ft. panels 3 ft. wide could be glued into a curved laminate from which could be sawed the curved members for bowstring trusses. In the same manner, curved barn rafters could be mass-produced by gluing up wide curved laminates and resawing them into rafters. And treated wood could be end-jointed and edge-glued into wide panels for supporting highway and railroad bridges.

While reliable cost figures cannot be obtained until an actual production run has been made commercially, preliminary cost studies by Richards and Cool show that 1 x 4 in. lumber could be end-jointed for 2 to 3 cents a joint on a small-scale production set-up. A large-scale high production set-up might bring the cost down to 1½ cents a joint.

ERRORS TO AVOID IN DESIGNING END JOINTS

Should a manufacturer want an end joint which, although similar to the type described in the accompanying report, is varied for some special purpose, common causes of weakness will be avoided by observing the following precautions in designing such joints:

1. Do not have a truncated tip at or near surface of board. Greatest strength is obtained by having rather low-angle scarf extend to surface. If joint is well glued, scarf will dress to neat joint; if poorly glued, bad joint will show after surfacing and can be readily rejected for uses requiring high strength.

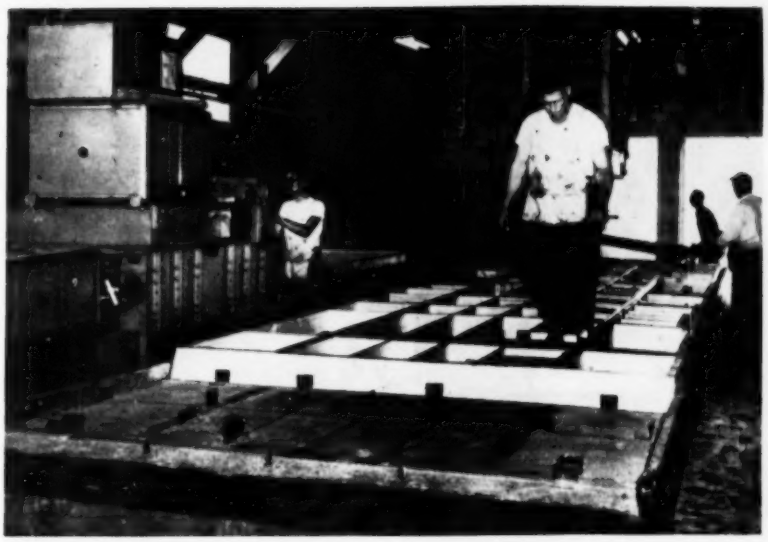
2. Do not have broad tips on fingers. The 0.062 in. tips seem quite satisfactory. Rounded tips 0.080 in. wide show no great reduction in strength.

3. Have as few truncated tips as possible. Three scarfs and two truncated tips seems best combination for 1 in. lumber; five scarfs and four truncated tips for 2 in. lumber. This keeps length of fingers within reason.

4. Do not use extremely steep or extremely flat scarfs. Practical joints with strengths from 65 to 85% of solid wood's bending strength can be designed with scarf slopes between 1:4 (angle of 14°) and 1:8 (angle of 7.1°). Scarfs with slopes steeper than 1:4 show low strength values. Except for very special purposes, such as marine lamination, scarfs flatter than 1:8 should be avoided in finger joints. Flat scarfs require either very long fingers or many fingers and, hence, many truncated tips to serve as points of weakness.—*From Richards-Cool report.*

Building Trailers That Stay Put

Strength, Safety Gained by Stressed Panels and Gluing of All Structural Wood in Anderson Trailer

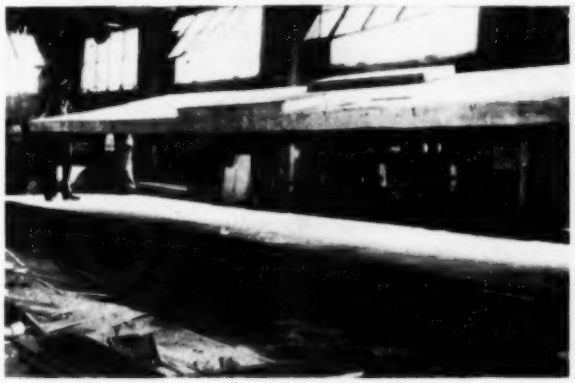


PRODUCTION BEGINS with assembly of floor. Adhesive is applied to beams and cross pieces, exterior plywood is laid on, entire unit bonded at once

FROM MICHIGAN'S summer vacationland on the shore of Lake Huron come some of the finest trailer homes built in America today. While the summer visitors to East Tawas concentrate on fishing, boating and swimming, the Anderson Coach Co. is busy the year 'round turning out strong, safe, comfortable trailers.

Made in 31 ft., 35 ft. and 40 ft. lengths, these mobile homes incorporate the most advanced construction developments in the trailer industry and are available in a variety of interior room arrangements to suit the individual purchaser's needs.

A key to the company's superior type of construction can be seen in the roof. Under the outside aluminum roof covering are five full-length 1 x 2 in. beams, instead of the one beam found in many other trailers. All cross members, bonded electronically to the interior plywood, make a honeycomb of securely fastened interlocking joints. Since the sidewalls, roof and platform all employ stressed-panel construction, loadings are distributed over the entire structure.



WITH wheel housings added, trailer is overturned for routing out heat duct openings

The rigidity of an Anderson Coach roof can be tested easily by pushing up on the ceiling from the interior. There are no poorly fastened joints, no open joints hidden by moldings, no moldings, and no give. This is a roof that can support heavy weight and impact, an important safety feature.

The soundness of the construction is pointed up by the comparatively minor damage suffered by two of the trailers in highway accidents. In neither case was the floor or ceiling smashed, broken or otherwise harmed. Major damage occurred at the point of impact on the side wall.

The "stress-ply" construction developed by Anderson Coach depends upon dielectric wood welding. A moisture-resistant urea-formaldehyde resin adhesive is used as the bonding agent, providing a uniform, all-over bond between all structural wood contacting surfaces. Because of the length of most trailers today (the distance from hitch connection is sometimes 30 ft. to wheels), the stresses set up by the bending movements are tremendous and explain why the Anderson Coach people prefer a glued construction over nailing.

Out of the Anderson plant each day

COMPANY designs and makes its own cabinetwork

KITCHEN has double-basin sink, refrigerator, oven, mar-proof counters

FRESH out of paint shop, 35-footer is ready for delivery

come six or more trailers, complete with such modern, convenient equipment as an oil-burning heater, 7.25 cu. ft. refrigerator, four-burner range with eye-level oven, and double-basin sink. A practical innovation is the use of attractive and damage-defiant laminated panels on kitchen counters.

The trailer production line begins with the assembly of the floor. A honeycomb of precut 2 x 6's is assembled in a jig the width and length of the trailer-to-be. On the top edges of all beams and cross pieces the adhesive is applied by means of a tube with a roller at one end which applies the glue as the operator walks between the framework.

Sheets of 5/16 in. exterior fir plywood are then laid on, and the entire unit, still in the jig, is swung over into a dielectric bonder designed especially for this job by Anderson engineers. The 28,000-watt radio frequency machine generates heat and exerts pressure of 100 p.s.i. on the glue lines within a 4 ft. length and the entire 8 ft. width area. When the time cycle is complete, it moves along automatically to bond another 4 ft. section, repeating each cycle down the entire length of the trailer floor.

After unit's removal from the bonder, holes are cut to accommodate heating ducts, and fire-resistant insulating material is laid throughout the honeycomb. The glue is then rolled onto the other top edges of the framework and ⅜ in. exterior plywood is applied by the same giant bonder. This side will be the top side, upon which linoleum will be applied.

At this point, when the floor is hoisted by chains on each end and overturned for spraying with a fire-resistant coating, there is almost no visible deflection. The company states that the floors previously used had a deflection of as high as 9 in.

A steel frame and a tandem set of wheels are then attached, and the unit is swung down the line for assembly of its four walls. Like the floor and roof, the walls are also insulated, and the spruce frames are bonded with the same urea-formaldehyde adhesive. Wall exteriors are covered with aluminum skin, birch plywood is used for interior wall surfacing, and bows of wood laminates are used at each corner for added strength.

After addition of aluminum panels and installation of interior equipment, appliances, cabinets and closets, the trailer moves into the paint shop, then out through the door for delivery to one of the authorized dealers in any of the 48 states.

The Anderson company designs and makes all of its own kitchen cabinets, drawers, dressers and closets. The latter are available with either sliding or standard swing-type doors. For all of these, the same adhesive was chosen for welding all joints. Nineteen electronic heaters, both portable and stationary, are used in the plant for the wood welding jobs.

To make sure that it is using the best possible materials, the company has carried on some tests of its own making. One of these sought to prove that no buckling, delamination or weakening of the bond would occur where wall panels are likely to be splashed. Small sections of the glued birch or fir plywood and spruce board were soaked in various acid solutions for varying periods of time. In one case, five pieces of spruce were bonded vertically to a flat piece of birch plywood. These were then submerged in a jar of water in December, 1949. To this date the bond is still solid.

On April 14, 1952, pieces of birch and spruce were bonded to fir ply wood and sealed in a jar containing water and ammonia. Still in solution, the bond is still solid. Similar tests have been made in solutions of 100% and 50% muriatic acid. The former has caused no harm to the bond after four months, and the latter, prepared on April 11, 1952, still shows no signs of eating away the glue. In both cases, however, the wood itself has suffered. In some cases, the plywood has delaminated.

Satisfield that it is making one of the best trailers on the market today, the Anderson Coach Co. is still seeking further improvements. A second plant is under construction in East Tawas and is expected to be in operation this month. The company will then have two of the most modern plants in the industry, can increase its production, and undoubtedly can be relied upon to bring about still other innovations to make trailers stronger, more comfortable and attractive, and in keeping with modern living trends.

Editor's Note.—*Thanks to the American Cyanamid Co., Plastics & Resins Division, for its co-operation in supplying the accompanying illustrations and facts for this article.*

Detector Protects Chipper

The W. T. Smith Lumber Co., Chapman, Ala., has installed a metal detector on its production lines to inspect wood waste traveling to chipping equipment and to protect the chipper knives from tramp metal.

The detector, installed by Allis-Chalmers Mfg. Co., is proving successful in discovering the presence of nails, steel gear and even hand tools, and more important, has practically eliminated down-time normally experienced when equipment is damaged by tramp metal. W. T. Smith management expects the metal detector to pay for itself in about four months of operation.

Mounted on the inclined conveyor system that carries wood to the chipping machine, the metal detector has a special aperture height of 16 in. to accomodate the various sizes of wooden slabs, edgings and trimmings. When metal is detected on the conveyor, a relay is energized and the conveyor belt stopped to allow removal of the metal. The detector is reset by means of a pushbutton station. This installation was the first in the lumber industry.

DETECTS metal in wood waste

Is Your Foreman on the Management Team?

Attitude of Superiors, Approval of Employees Vital in Making Foreman Feel He Really "Belongs"

By MILES ROBSON*

"GRIEVANCE: Management favors the shop steward"

MAKING FOREMEN A PART OF MANAGEMENT is one objective on which most executives can agree. Every year, additional companies join the ranks of those who practice, as well as preach, this organizational concept. But there is considerable room for improvement: and it should be said from the outset that the goal can't be reached easily.

Several reasons account for this, and foremost among them is *definition*. I like to ask employers I meet at various functions, "What do your foremen do?" The answers usually confirm the multitude of job descriptions which the general title of foreman includes.

If you apply the term "foreman" to an individual who supervises workers on more than one shift or in more than one area of the plant, and who has authority to determine work procedures and devise manufacturing processes and toolings, that foreman has hardly anything but the name in common with those foremen who rigidly adhere to schedules and standards laid out for them by others. This difference lies in the degree to which a foreman "manages."

But there are other considerations—seldom spelled out in any supervisor's job description—which determine whether he is in fact part of management. Putting it simply, he has that status:

. . . if his superiors treat him as such.
. . . if his subordinates regard him accordingly.
. . . if he himself feels he belongs in the management group.

Three separate sets of attitudes are involved, and whatever management does in the interest of improving the quality of supervision must give equal weight to these factors. There is little use trying to "build up" the foreman in the minds of the rank and file if top management's own acts reduce his stature, or if he lacks the information and authority which he should have as a member of the management group.

In a recent survey the National Foremen's Institute gathered considerable data on foremen's duties in both manufacturing and non-manufacturing concerns. The returns enabled classification of foremen in both types of companies according to the nature and scope of their duties into what we call Class I and Class II categories.

The typical Class I foreman usually

*Training Director, National Foremen's Institute, New London, Conn.

ARTICLE 4 IN TIMELY SERIES FOR MANAGEMENT

So much depends on supervision—cost control, employee morale, elimination of bottlenecks and other threats to sustained production efficiency—that progressive management in the wood industries, as in many other fields, is constantly seeking ways and means to improve the calibre and capacity of its foremen.

To help its management readers, as well as plant superintendents and foremen among its subscribers, WOOD & WOOD PRODUCTS has arranged with the National Foremen's Institute for the exclusive publication of this series of articles on various phases of the foreman problem. This month's article, dealing with the foreman's status in management, was preceded in these pages during the past three issues by related articles on the handling of foremen's gripes, hints on better foreman training, and the foreman's role in human relations. Concluding article of the series, scheduled for the December issue, will discuss the contributions to effective cost control which good supervision can make.

Mr. Robson has had 27 years' experience in the training and industrial relations field. He is presently lecturer and advisory committeeman at the Management and Industrial Relations Institute of Rutgers and Cornell Universities, and he has lectured at New York University. In addition to serving as director of personnel and training for a large international manufacturing organization, he has consulted on such problems with leading companies in the metal, food processing and other basic industries.

The wood industries as a group still have a long way to go in training and getting the most out of their foremen, and this timely series should stimulate much constructive thinking and action in that direction. If you have foreman problems, or if you are a foreman with a thought or two that may help the cause along, by all means let us have your ideas on this highly important subject.—*The Editors.*

"SOME FOREMEN feel excluded from the managing group"

has years of experience and works under the general direction of the plant superintendent or general foreman. He may supervise workers on more than one shift or in more than one area of the plant. He determines work procedures and has his say with respect to processes and tooling. He is responsible for maintenance and repair of equipment, material and supplies.

Such a foreman is involved in hiring workers, in training them and in assigning jobs to them. He is permitted to initiate rate changes and to take disciplinary action. He also keeps time, production and personnel records.

The Class II foreman occupies a lower niche, and is therefore in greater need of management help in conditioning employee attitudes. A foreman in this category ordinarily supervises men on one shift and in one work area, and the work supervised is often repetitive in nature.

He assigns work in line with work schedules, and when he trains new workers he commonly uses a training outline prepared by others. He requisitions supplies and materials in accordance with specifications set up by others, and refers matters of promotion, leaves of absence and discipline, with recommendations, to his superior. The Class II foreman usually has fewer years of experience than Foreman Class I, but may be in training for a Class I job.

In non-manufacturing fields, the Class I foreman commonly directs the work within a particular department or establishment and assists in formulating policies which relate to selection, training, promotion, salaries, recreation and discharge of employees. He executes these policies directly or through subordinates, and is responsible for the efficient functioning of his group.

Other responsibilities include maintaining harmonious working relations among personnel, insuring cooperation with other departments, maintaining records of attendance, production and efficiency, and supervising inventory.

Helping the foreman in Class II to grow toward the higher rating is one of the best ways to enhance his stature. There is nothing "make believe" about enlarged authority due to increased responsibility.

As the foreman develops, the checkreins on his performance can be gradually loosened, to the point where he can be judged primarily on results. During the growth period, the foreman should always know how far he can go in particular situations.

Self-Analysis Sparks Program

"Do we really treat our foremen as executives?" This question is the logical starting point in shaping the foreman improvement program. It is easier to answer this question in a smaller company than in bigger organizations. There are many concerns employing anywhere from 50 to 500 people where the president or general manager knows personally every foreman in the shop. He can decide very quickly whether the performance and competence of his foremen come up to his expectations; and if the answer is "No," he can take direct action.

But where there are several levels of management between the top executive and the foreman, both appraisal and correction of the foreman's functions are harder to carry out. It is always harder for the top executive to induce intermediate executives to change their attitudes than it is to change his own.

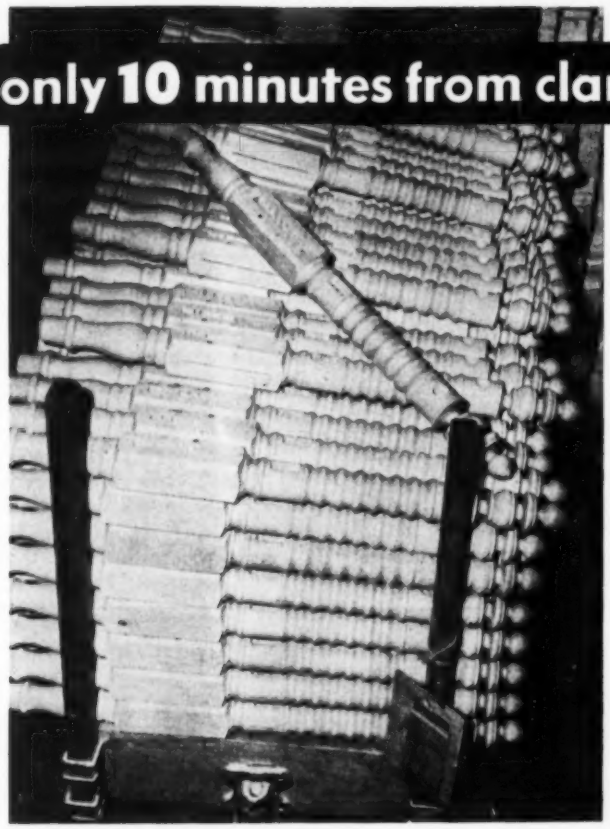
There is no simple formula which applies to all instances. Circumstances differ from plant to plant, and nobody yet has defined a pattern of human relations which would be effective or acceptable everywhere. But certain *elements* characterize all such relationships, and their presence or absence gives a clue to analysis and action.

Recognition of the foreman, in a human relations sense, boils down to treating him as a part of the executive team—not as something quite distinct and well removed from the ranks of management. Many executives use only picnics and other social occasions to mingle with their foremen, but to the majority of foremen this social recognition is just frosting on the cake. Working relationships within the plant are what really count. Here are some of the ways in which companies are making their foremen actually part of the management team:

1. By giving them an opportunity to shape, or at least to influence, decisions affecting their operations. Departmental committees, where mutual problems are worked out, give foremen who serve on them a sense of participation. Devices of this sort are being used effectively in many fields.
2. By reviewing policy changes with the foremen, as a group, before putting these changes into effect. There are many cases on record where "hashing out details" in advance has saved time and money by forcing revision of a plan before, and not after, certain damage has been done.
3. By giving supervisors a clear picture of the company's external operations, such as sales and advertising, branch installations,

"The FOREMAN should see himself as part of management"

only 10 minutes from clamping to machining!



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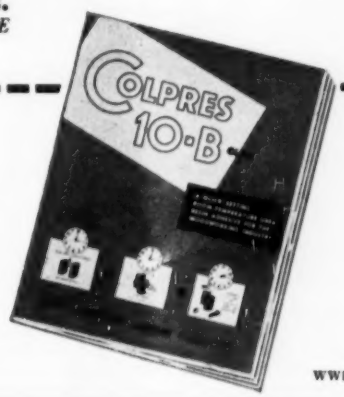

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capital considerations, competitive standing, and the like.

4. By including the foremen in "sideways communication"—the network of memos, reports and bulletins which too often are confined to higher officials. Some firms have found it helpful to digest such information for the supervisors, to give them a condensed daily report on matters which directly affect their operations.
5. By giving supervisors an active part in establishing standards of practice and performance.
6. By helping the foremen, through special training, to do a better job of human relations and work administration.

Steps like these lift foremen out of the "second class citizenship" of the industrial community.

What workers think of foremen is equally important. Supervisors are in a difficult spot, alienated in a sense from the very people with whom they spend most of their working time, and who are quick to notice anything which takes the boss "down a peg."

A common grievance among foremen is that management favors the shop steward, by-passing the company's own "management representatives." Another complaint is the failure or unwillingness to back up the foreman in disciplinary situations. Such practices lower the supervisor's importance in the worker's eyes, and naturally keep him from feeling that he is a part of management.

I have heard more than one foreman complain that executives respect each others' prerogatives, but when they are on the factory floor they give orders to the first person they meet. "They carry on long conversations with my men with no concern as to whether they are by-passing me or not," another foreman commented.

The foreman is extra sensitive in such cases because management has not given him enough authority and responsibility of a tangible sort. If he had to be consulted in a matter affecting his men, such as hiring or firing, and that consultation was definite, he would be less concerned with minor infringements into his affairs by higher executives.

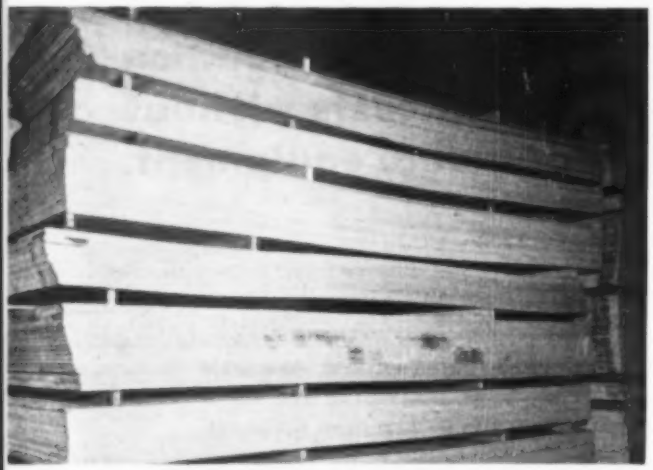
Here are some other ways in which management, by its actions, can lift foremen in their workers' estimation:

1. Encourage foremen to make their own decisions, wherever possible. Cut down the supervisors' need to tell employees, "I don't know. I can't promise. I'll have to talk with the boss."
2. Make each foreman supreme in his own department. Go through him, not around him, when deal-

How to Ruin

LITTLE THINGS—a bit of carelessness on the production line, one worker's slipshod act, or another's moment of thoughtlessness—can ruin quality products, be they cabinets, furniture, paneling or any other item in the forest products industry.

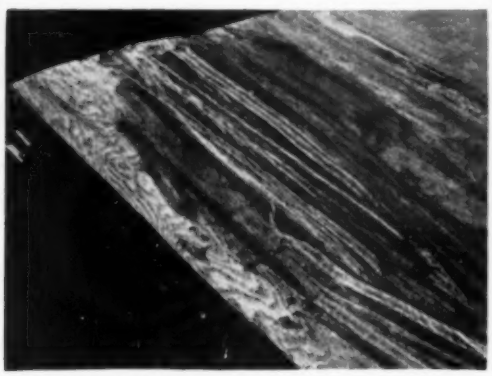
More than one manufacturer has learned to his sorrow that high quality materials and carefully planned operations have fallen prey to the human element somewhere along the production line. Eternal vigilance must be the watchword.



WHOOPS, watch that sag! Poor stacking has caused the fourth pile of panels from the top to sag on each end and rise in the center. Slight misplacement of the supporting two by threes when piling can cause serious warpage

KILLING quality is Shimming Sherman, who here has selected two dark colored shims to patch surface of a nice light colored birch panel. Somehow this doesn't appeal to buyer

PATCHING PATRICK gets patches on patches. Here he's put in a boat patch which is too small and dark, and he shims around it to make it fit. Who will patch the hole in the order file?



STICKY SAM is a great man with glue, but carelessness can produce a damaging glue swipe like this. Simple things some times produce loss all out of proportion.

ing with his subordinates. This means members of the 25-year club, even if they did break in the "big boss" when he first came with the company. It includes the treasurer's nephew, who is working his way up, and also the shop steward. It also means tightening up "informal" methods which encourage channel crossing and detouring around the foreman.

3. Make the foreman responsible for workmanlike behavior on the part of his subordinates. This includes authority to admonish, punish or even discharge those who violate the rules—powers which supervisors prefer not to exercise unless they have management's support. Should foremen make mistakes in judgment, it is wise to help them "save face" by giving them a chance to reconsider, rather than overruling them before witnesses.
4. If management has criticisms or warnings to express to a foreman, they are better said in private. Differences, too, should be ironed out behind closed doors.
5. Start new employees off on the right foot by giving the foreman a major part in the orientation process, so they will look to him for guidance and assistance.

The Foreman's Own Feelings

Managers who plead inability to take such measures, because the foremen "aren't ready" or "seem unqualified," are not making optimum use of supervision. They are paying the price for poor selection and inadequate foreman training. They may refer to their foremen as "part of management," but the employees remain unimpressed—and withhold their seal of approval.

How the foreman feels is the product of these two forces, plus some evaluations of his own. He knows how foremen fare in other plants, and has no trouble comparing his functions, responsibilities and powers with theirs. As a resident, church goer, civic club member and neighbor, he knows how he and his fellow foremen rate in the community. If he is treated as an executive by those beneath him and above him, he thinks like one and acts like one, both in plant and without.

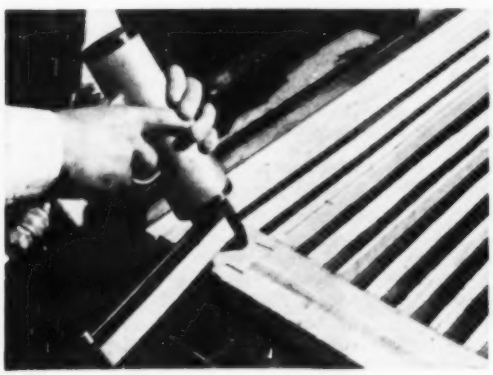
This is particularly true since the pay differential problem disappeared, as it largely has. As the Institute's survey showed, foremen's salaries run from ten to 25 per cent above the take-home of hourly employees whom they supervise. We believe this economic indicator points toward more intelligent and effective use of foremen, including their unquestioned acceptance as a part of management.

Quality Products

But constant carping and haranguing sooner or later loses its effect upon the workers. Often a reminder in the lighter vein can accomplish the desired result much more pleasantly and effectively.

These pictures and humorous comments were published recently by the M & M Wood Working Co. in its quarterly employee magazine. They are reproduced here in the belief a similar approach may have merit elsewhere in the industry. Thanks for your fine co-operation, M & M!

LEFT—Dollars disappearing in damage. Improper loading allowed plywood in this car to shift, battering ends of the panels. Result: a very unhappy customer. **RIGHT**—A few minutes' work would save dollars. Plywood loaded into automotive freight cars can be scored and ruined by grease unless chains are tied up and springs wrapped



IF Gunner Gus gets staple happy and plants them too close to edge of these flush door cores, he's in trouble. Contractors don't enjoy ruining saws on staples. They won't come back

IF Fork Lift Frank gets a bit off the beam when bringing his fork in to pick up a load of panels, he does plenty of damage. Fork's tip has wrecked a panel here

BIG FOOT Bill, not content to leave footprints in sands of time, also plants his dirty mark on some choice hardwood panels. Dirty plywood won't do for those paying good money for it

Article 13 in Series

Methods of Testing Glue Joints

Procedures and Frequency of Testing Strength and Durability — Significance of Various Shear Tests

By THOMAS D. PERRY

Q. 130. Is there a satisfactory way to test the adhesive quality of a glue mixture before it is applied to the wood?

A. 130. Experience is a reasonably good guide, but there is no recognized standard test. In the case of animal glue there is a well recognized series of tests indicating jel strength and viscosity. This was developed for the purpose of grading and blending as each batch of glue came off the production line. It is not, however, a test of normally prepared glue, ready to apply. This animal glue test is not applicable to any other glue or adhesive.

Since most glues have a limited "pot" life of two to several hours, during which they are of suitable consistency for spreading, it is obvious that this brief period of usefulness should not be shortened by any testing procedures.

Q. 131. What type of test is considered most satisfactory to determine the strength and durability of a glue joint?

A. 131. The standard test that has survived the many years that plywood has required for exacting service in boats, aircraft and marine structures is the *plywood* shear test, now well established in government and commercial specifications.

It is used by adhesive manufacturers to test glues as they are made and to evaluate new formulations and ingredients, as well as by inspectors and purchasers to make "spot" tests of manufactured plywood to determine its compliance with specifications.

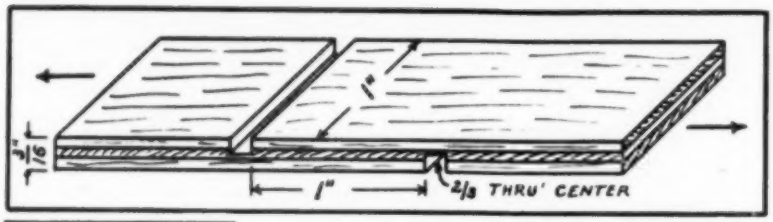


FIG. 1—Specimen as prepared for plywood shear test

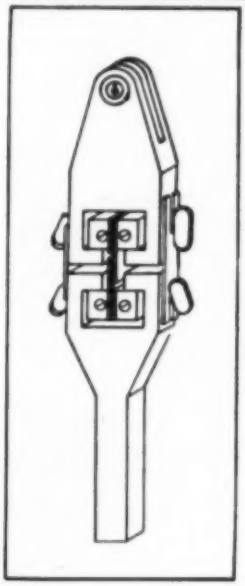


FIG. 2—Fixture for testing specimen shown above

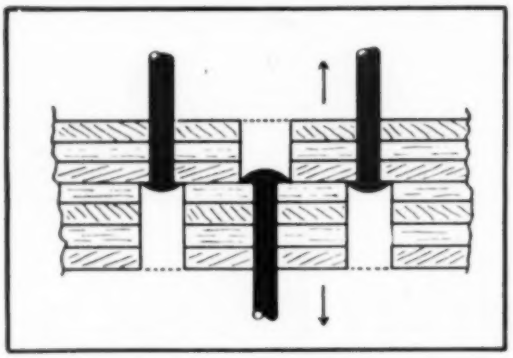


FIG. 3—Glue joint in direct tension

In its basic form it consists of samples of 3/16 in. 3-ply birch plywood, 1 in. wide by 3¼ in. long, cross slotted on opposite sides as indicated in Fig. 1. This leaves an "island" one in. square, consisting of the central layer of cross laid veneer between two adjacent glue joints, which is held by these two glue lines. Since this test area is one square in., the dial reading on the testing machine gives the desired results without computation.

When pulled apart in two pairs of clamp jaws, as shown in the fixture of Fig. 2, this central area will be subjected to shear, both in the veneer itself and in the two adjacent glue joints. Testing machines register the maximum load before breaking, which is the actual shear strength per square inch.

Another consideration of almost equal importance to this maximum strength, is the percentage of wood rupture that is observed over the broken surfaces at or near the glue joints. If it shows a clean break on either glue line it indicates a lack of glue penetration and is considered unsatisfactory. If the break is entirely in the fiber of the central veneer layer, it indicates that the joint is stronger than the wood, but it is no assurance that it was not a weak or defective piece of veneer. This is also considered unsatisfactory.

A satisfactory test is one in which the break averages 25% to 50% of torn wood in the veneer. Estimating this percentage requires ability and experience on the part of the operator who is evaluating the area of wood rupture.

The maximum shear values on 3/16 in. 3-ply birch vary according to the exposure cycles and the condition of the sample, but range from 250 to 350 lbs. p.s.i. *across* the grain.

The size and shape of this test sample may be varied according to the thickness of the veneer and the test pieces may be soaked, boiled and dried in various cycles. While this test procedure may be carried out with other species, the basic standard remains in birch, which is one of the stronger species and is reasonably uniform in its physical characteristics.

Q. 132. Is there a practical test that can easily be made by the average woodworker?

A. 132. There is no easy or simple test that is reliable and has become recognized. The plywood shear test described in Answer 131 requires rather extensive equipment and considerable "know-how" and therefore doesn't fit into standard factory procedure. Some larger plywood factories have established their own testing laboratories and factories not so

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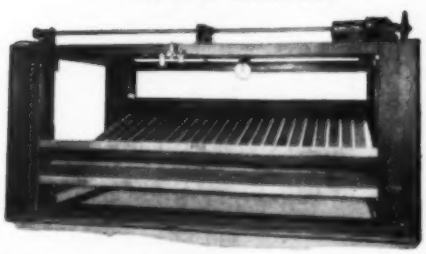

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With the stacks of veneer serving as a feed table the operator pushes the top sheets forward until the leading edge contacts a stop.

At the proper time the stop moves aside and two live rolls grip the sheets and move them onto a floating conveyor.

The conveyor then transfers the sheets, at an accelerated speed, and discharges them onto the rolls in the feed end of dryer.

The conveyor is automatically shifted from one deck to the next as each becomes filled with veneer.

A variable speed transmission automatically synchronizes all feeding operations and is adjustable to handle sheets of various lengths. It also uniformly spaces them, which increases output by fully utilizing the capacity of each deck.

Up and down movement of the feeding apron to compensate for varying heights of the veneer pile is handled by push-button control.

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equipped usually send their samples to specialized testing laboratories that are available in the larger cities and in many educational institutions.

Other types of laboratory tests have been developed. Some of them are good, but they have not been accorded such general recognition as the standard *plywood shear* test. In some cases these alternate tests may be more suitable for special problems, but ultimate evaluation almost always reverts to the standard plywood shear test.

Q. 133. Is there any special significance to a shearing test, rather than to a tension test on a plywood glue joint?

A. 133. There is. Most plywood, in actual service where strength is a factor, is subject to intermittent or constant sidewise or slipping stress on one or more of the glue joints, as when a veneer layer shrinks, when the plywood is bent or curved, where the plywood is used as a reinforcing gusset, or in many other applications.

There are few, if any, applications where an adhesive in a glue joint is subject to true or direct tension. It would be when the applied stress lifted one or more layers away from the other in a direction perpendicular to the area of the glue joint, as is illustrated in Fig. 3. Neither glue nor wood has substantial strength under such a tension stress.

Q. 134. What "rule-of-thumb" tests are customary in a plywood factory, which can be applied to plywood as it is made?

A. 134. There are many, and each glue room foreman has his "pet" scheme. Two are in rather general use which give considerable information as to strength. Neither of them evaluates durability, which has become an important factor when using synthetic resin adhesives.

One is the *breaking* test, applied to outer trim strips from the plywood dimension saws. They are broken across the knee, or on a bench corner, or on a truck post. They are essentially shear tests and indicate the approximate area of wood rupture under shear, because of the bending effect.

However glue joints, at the edges, may not be of maximum strength, as pressure may have been lessened by veneers of uneven size, and careless handling may have dented or bruised the untrimmed edges. In general, however, this breaking test gives the best quick and ready appraisal of shear strength under factory conditions.

The other is usually called the *knife* or chisel test, and consists of prying off the outer end of the outside veneer layer, usually just after clamping pressure has been released. This has two serious limitations; first, it is essentially a tension test; and second, its results will vary with the thickness and species of the outer veneer layer.

If the outer veneer is thin and weak, as in 1/24 in. poplar, it will be difficult to pry off more than a small splinter, and the joint may appear to be good. On the other hand, with exactly the same gluing technique, a ⅛ in. maple face will be so strong as to peel off in long narrow strips, and suggest a poor joint, which may be an erroneous conclusion. Neither result is conclusive.

There is another objection to this type of knife test, as it is applied soon after pressure release. In hot pressing the outer veneer is over dry and brittle and will not indicate actual strength values until plywood has reached normal moisture content and temperature. In cold pressing the reverse will be true, since the plywood, before redrying, will be too wet and will not show normal results until after redrying. In addition, the glue may not be completely set, and may not have attained its normal strength.

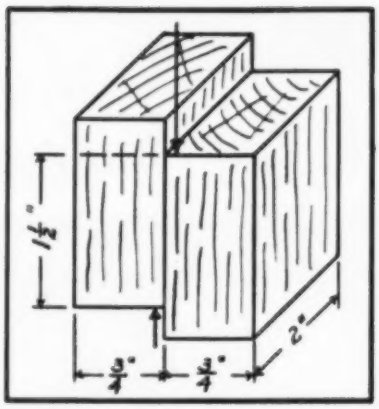

FIG. 4—Block shear test for glues and adhesives

Q. 135. How is the standard plywood shear test applied to a 5-ply or 7-ply construction?

A. 135. The center 3-ply is usually tested, on the reasonable assumption that the inner joints will develop more defects than the outer layers. In preparing the samples, the outer layers are stripped or sawed off, until the

Continued on Page 74

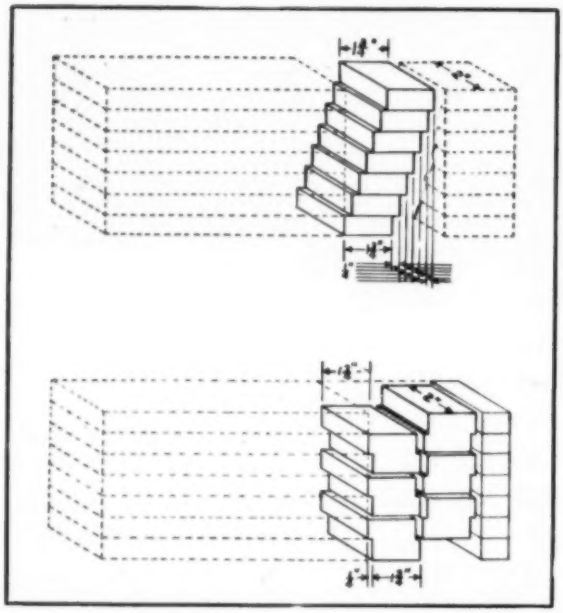

FIG. 5—Samples from laminated timbers for block shear tests

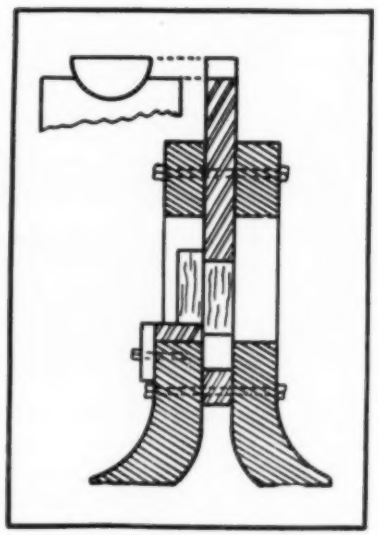

FIG. 6—Fixture for block shear tests

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DIEHL #69—precision jointing and glueing in one operation

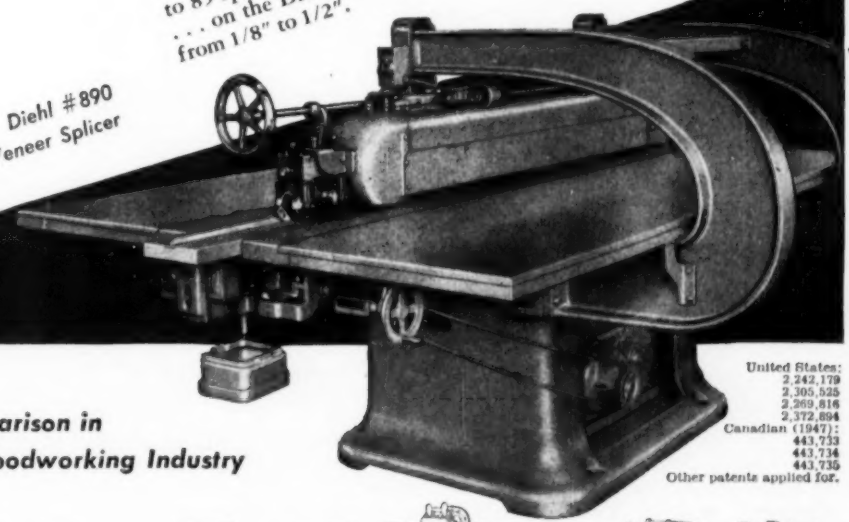
Designed for mass production of plywoods and veneers. With the Diehl #69, operators can feed mixed widths in either end in bundles up to 2" thick—with minimum adjustment—and count on clean, precision joints. The #69 joints and glues *in one operation*. Four feed speeds, from 15 to 50 fpm. Solid stock may also be jointed, with or without glue. Controls are simplified for *easier* operation.

DIEHL #890—tight, invisible splices without taping

Built for high-speed performance—perfect combination with the Diehl #69 above. With the Diehl #890, operators get tight, invisible splices *without* the conventional need of taping or tape removal—with sanding minimized.

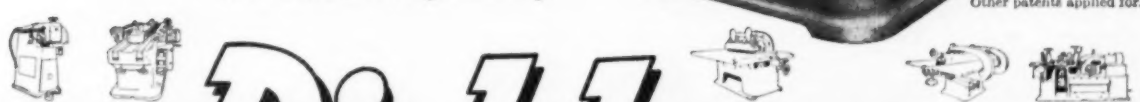
Set-up is *fast*—operation is *simple*—and feed speeds are up to 85 fpm. Stock thickness on the Diehl #890 is 1/64" to 3/16" . . . on the Diehl #900 Electronic Tapeless Splicer (not shown) from 1/8" to 1/2".

Diehl #890
Tapeless Veneer Splicer



United States:
2,242,179
2,305,525
2,269,816
2,372,894
Canadian (1947):
443,733
443,734
443,735
Other patents applied for.

Standard of Comparison in the Woodworking Industry



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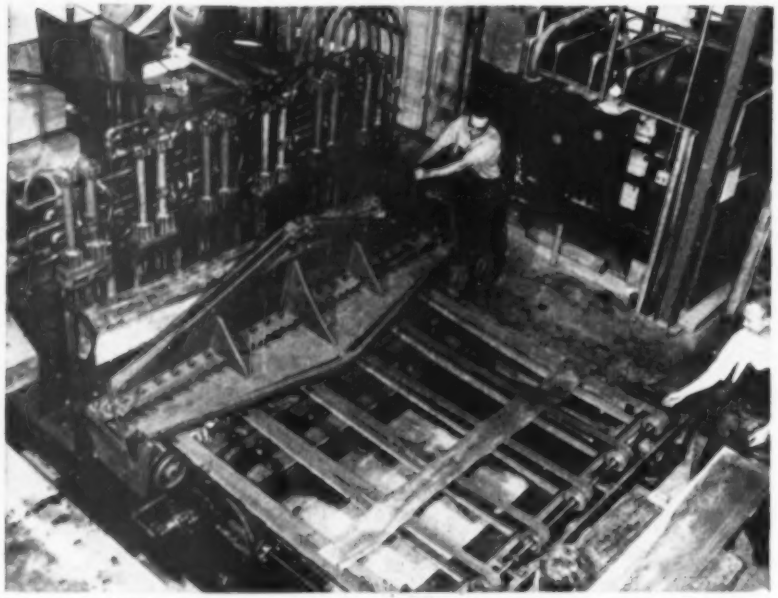


NEW VENEER SLICER at U. S. Forest Products Laboratory, Madison, Wis. Designed especially for experimental work, it can cut veneer to less than 0.01 in. with accuracy of 0.001 in. or maximum slices to ¼ in.

New Veneer Slicer for Laboratory

The only veneer slicer in the United States designed especially for experimental work was recently installed at the U. S. Forest Products Laboratory, Madison, Wisconsin.

The new slicer, according to H. O. Fleischer, in charge of the Laboratory's veneer research, combines precision cutting and high speed. It will be used to study slicing as a way of converting timber into a wider variety of useful products and also to explore the possibilities of using various little-used species for sliced wood products.

Such work will complement the laboratory's previous extensive research on veneer cutting with a rotary lathe. Advantages of slicing include smaller logs and species not suitable for rotary cutting, Fleischer said.

Since experimental work requires study over a wide range of conditions, specifications for this machine were unusually exacting. They required a high degree of accuracy, as well as versatility in cutting adjustments, thicknesses to be cut, and operating speeds. The machine was built by a commercial manufacturer who has had many years of experience in producing veneer slicers. It has not only the newest features available in commercial machines, but a number of added features required by the laboratory's specifications.

The veneer slicer is of the vertically operating type, in which the flitch is carried over the knife. The veneer is cut on the down stroke. The slicer can cut flitches as large as 22 in. in cross section and 8 ft., 4 in. long. It is precise enough to cut veneer less than 0.01 of an inch thick with an accuracy of 0.001 inch. It is rugged enough to cut veneer as thick as ¼ in.

Total weight of the machine is about 45,000 lbs. Features include: variable operating speed from 25 to 90 strokes a minute; 40 horsepower induction motor; variable speed transmission; two hydraulic systems, one which operates the hydraulic dogs that hold the flitch to the flitch table and the other which operates the offset mechanism; extension dogs for clamping large or heavy flitches. Should the flitch break or become undogged, the drop in hydraulic pressure in the system automatically stops the slicer.

The laboratory's veneer research equipment also includes a rotary lathe, a mechanical veneer dryer, a veneer edge splicer, gluing and pressing equipment, and equipment for heating veneer logs. Research starts in the woods with the selection of veneer logs and includes problems of heating bolts of various species, lathe adjustments, veneer drying, plywood production, and performance testing. The laboratory's report on rotary cutting of veneer is widely used as a textbook.

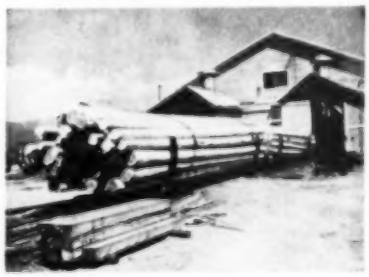
The main purpose of the laboratory's veneer slicing research, Fleischer said, will be to develop better ways to use the nation's timber resources. For example, redwood logs with pronounced ringshake may not be suitable for rotary cutting, but may yield sound cants that can be converted into high-grade sliced veneer.

Hardwood logs like the swamp oaks and hickory, Fleischer pointed out, tend to heart-check, especially when heated for cutting into veneer. It may be possible to eliminate the effect of these heart-checks, he believes, by cutting the material into half-logs or flitches for slicing.

Logs of such species as aspen, juniper, white birch, and red alder are not available in the large sizes needed for rotary cutting, but Fleischer hopes to use them to make sliced veneer.

Neils Adds Treating Cylinder

A new pressure cylinder has been added by the J. Neils Lumber Co., Libby, Montana, for the purpose of treating wood products with penta-



chlorophenol. Richard P. Neils, poles sales manager, states the cylinder will be used chiefly to treat western larch, lodgepole pine and Douglas fir poles, posts and lumber.

The new cylinder is 144 feet long with an eight-foot diameter. It has a capacity of about 3,000 cubic feet.

Lumber Car Unloader

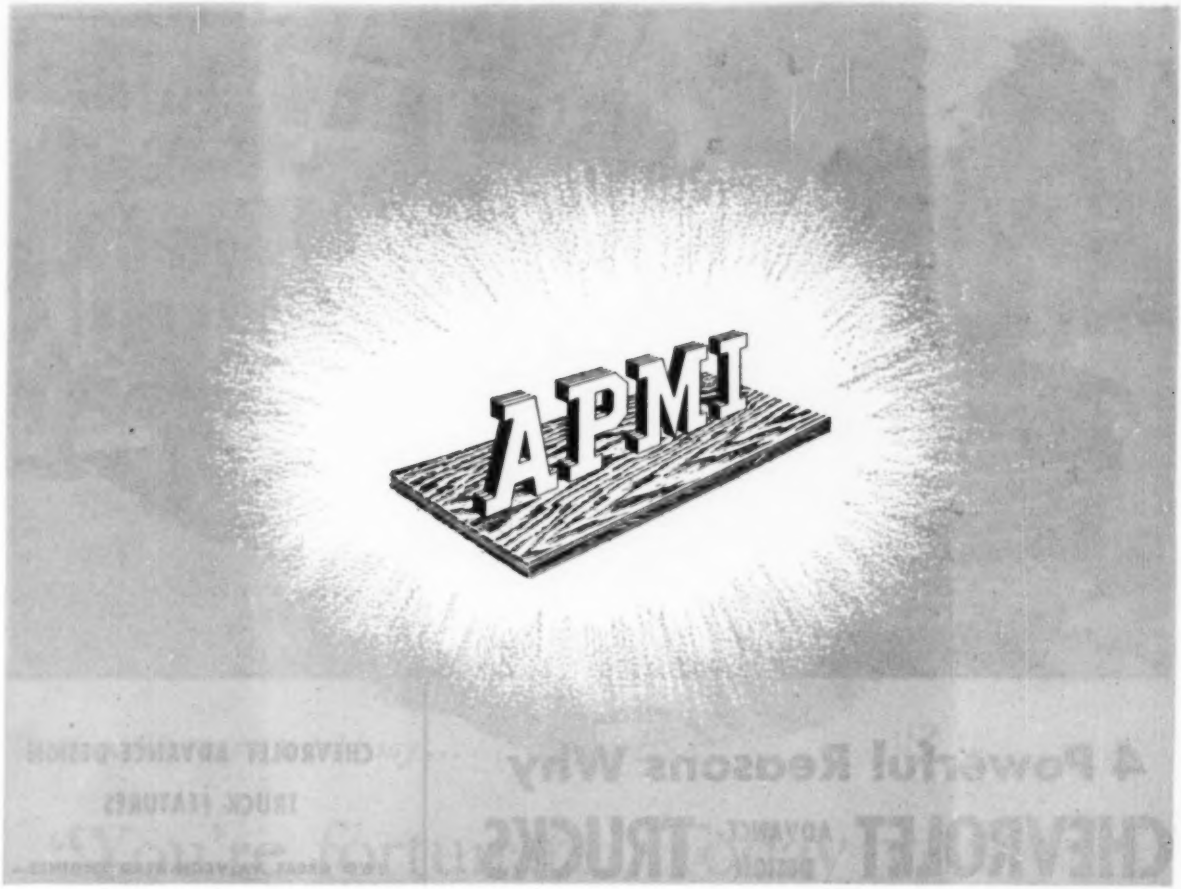
Editor, WOOD & WOOD PRODUCTS:

We are trying to locate the manufacturer of a tool used for unloading lumber out of a freight car. It is a pipe affair with one section sliding inside the other. The outside pipe is about 3 in. in diameter.

On one end of the pipe is a screw jack with a rod passing through it for tightening the pipe against the inside jam of the car door. On top of the pipe is a roller that the lumber passes over and this is set on a swivel.

We will appreciate your help in this matter.

—M. C. Co., N. Y.



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TWO GREAT VALVE-IN-HEAD ENGINES—the Loadmaster or the Thriftmaster—to give you greater power per gallon, lower cost per load. **POWER-JET CARBURETOR**—for smooth, quick acceleration response. **DIAPHRAGM SPRING CLUTCH**—for easy-action engagement. **SYNCHRO-MESH TRANSMISSION**—for fast, smooth shifting. **HYPOID REAR AXLE**—for dependability and long life. **TORQUE-ACTION BRAKES**—on light-duty and medium-duty models and on front of heavy-duty models. **TWIN-ACTION REAR BRAKES**—on heavy-duty models. **DUAL-SHOE PARKING BRAKE**—for greater holding ability on heavy-duty models. **CAB SEAT**—with double deck springs for complete riding comfort. **VENTIPANES**—for improved cab ventilation. **WIDE-BASE WHEELS**—for increased tire mileage. **BALL-GEAR STEERING**—for easier handling. **UNIT-DESIGNED BODIES**—for greater load protection. **ADVANCE-DESIGN STYLING**—for increased comfort and modern appearance.

CHEVROLET first in demand in value in sales

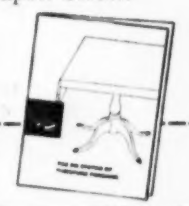
Thomas Sheraton would say...

"You're fortunate! Today you can get 'Wetordry' Sandpaper"

BRAND ®

Famous furniture makers nowadays know that sharp, fast-cutting "Wetordry" is an essential furniture-finishing tool. It's *the original waterproof sandpaper* . . . the standard of the industry the world over. Gives your fine furniture the best possible finish—lustrous, smooth, beautiful. Always insist on "Wetordry"® Brand. For complete information, send for booklet "3M System of Furniture Finishing", using coupon below.

The final finish mirrors all the previous operations



3M COMPANY

Illustration:
Artist's conception of Thomas Sheraton

Made in U.S.A. by Minnesota Mining & Mfg. Co. General Offices: St. Paul 6, Minn. In Canada: London, Ont., Can. Export: 122 E. 42nd St., New York City. Makers of "Scotch" ® Pressure-Sensitive Tapes, "Scotch" ® Sound Recording Tape, "3M"® Adhesives, "Underseal"® Rubberized Coating, "Scotchlite" ® Reflective Sheeting, "Safety-Walk"® Non-Slip Surfacing.

Minnesota Mining & Mfg. Co.
Dept. W.W.-113, St. Paul 6, Minn.

☐ Send me the booklet "3M System of Furniture Finishing"
☐ I'd like to talk to a 3M Salesman

Name.....Title.....

Company.....

Address.....

City..... Zone...State.....

CURRENT LUMBER PRICES

These prices are made available by George Land, publisher of the weekly *Hardwood Market Report*, in his copyrighted issue of October 3, 1953. For the entire list, contact Mr. Land, Box 5716, Memphis 4, Tenn.

Note: Each price change from preceding issue is marked by an asterisk (*).

SOUTHERN HARDWOODS

F.O.B. mills—Texas and Louisiana area. Estimate of present mill point average market price, to consuming trade on band-sawn Southern Hardwoods in carload quantities, random widths and lengths, rough air dried and graded in accordance with NHLA rules on inspection. Prices in dollars per M ft. On straight cars of upper bracket grades premiums are frequently being paid.

ASH—FIRM TEXTURE

	FAS	No. 1C	No. 2C
4/4-in.	160	120	62
6/4-in.	170	125	67
8/4-in.	190	150	80

BASSWOOD

4/4-in.	160	126	82
6/4-in.	170	135	87
8/4-in.	180	145	90

BEECH

4/4-in.	125	100	55
6/4-in.	140	110	60
8/4-in.	167	127	72

CHERRY

	FAS	No. 1C	No. 2C
4/4-in.	220	150	90
6/4-in	240	170	95
8/4-in.	250	180	100

RED GUM—PLAIN

4/4-in.	205	150	75
6/4-in.	230	170	75

RED GUM—QUARTERED

4/4-in.	270	165	75
6/4-in.	250	190	90
8/4-in.	260	200	95

SAP GUM—PLAIN

4/4-in	127	107	53
6/4-in.	138	118	55
8/4-in.	155	130	

HACKBERRY

4/4-in.	117	97	67
6/4-in.	132	112	
8/4-in.	135	112	75

SOFT MAPLE—WHAD

4/4 in.	130	110	67
6/4 in.	145	120	77
8/4-in.	155	125	80

SOFT MAPLE—WHND

4/4-in.	115	90	60
6/4-in.	130	105	75
8/4-in.	135	110	80

RED OAK—PLAIN

4/4-in.	175	100	72
6/4-in.	190	130	
8/4-in.	200	140	

WHITE OAK—PLAIN

4/4-in.	185	112	72
6/4-in.	200	140	
8/4-in.	205	145	

PECAN

4/4-in.	112	92	50
6/4-in.	130	110	60
8/4-in.	155	130	65

POPLAR—PLAIN

	FAS	S&S	No. 1C
4/4-in.	170	160	130
6/4-in.	185	175	140
8/4-in.	205	195	150

SYCAMORE—PLAIN

	FAS	No. 1C	No. 2C
4/4-in.	115	95	60
6/4-in.	127	107	62

TUPELO—PLAIN
TUF TEXTURE—DEEP SWAMP

4/4-in.	127	107	53
6/4-in.	138	118	55
8/4-in.	155	130	

WILLOW

4/4-in.	135	115	62
6/4-in.	142	122	67
8/4-in.	150	125	70

APPALACHIAN HARDWOODS

F.O.B. mills—Johnson City, Tennessee area. Estimate of present mill point average market prices on sales to consuming trade on band-sawn Appalachian Hardwoods in carload quantities, random widths and lengths, rough air dried and graded in accordance with NHLA rules on inspection. Prices in dollars per M ft. On straight cars upper bracket grades premiums are frequently being paid.

PLYWOOD BUYERS ATTENTION!

It's New — It's Remarkable

It's KALATEX

Striated Hardboard

For exterior siding, interior paneling, wainscoting, soffits. A smooth, grooved, easy-to-paint surface for lasting beauty and durability. Harder than grooved plywood (will not sliver or check) yet less expensive.

Write today for free sample, details, prices.

PLYWOOD WHOLESALERS
EXPORTERS • IMPORTERS

World's Finest Douglas Fir Plywood
Multi-purpose plastic faced plywood
Hardwood and plywood specialties

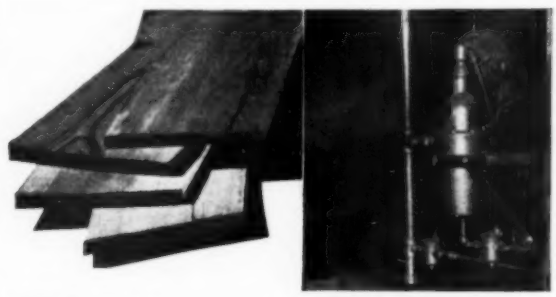
Mill prices to qualified buyers

"Heart of the Douglas Fir Forests..."

PH. OXFORD 5-8112
CABLE - PACPAN

PACIFIC PANEL CO.

1101 WEST 11th AVE, VANCOUVER, WASHINGTON



EFFECTS OF DRY AIR

ARMSTRONG STEAM HUMIDIFIER

WHICH COSTS LESS?

The pieces in the left picture came from an unhumidified furniture factory. There are no ruined pieces like this in plants equipped with Armstrong Humidifiers.

Add up the costs due to material, time and production losses caused by dry air in your plant during the heating season. Armstrong steam humidifiers like the one shown on the right will cost you far less! This has been proven in furniture factories throughout the country. Users often report they get their investment back in a single winter.

Now is a good time to have an Armstrong Representative make a free estimate of your humidification needs. He is well qualified and eager to serve you.

Write for free Bulletin 1774 telling how you can benefit from steam humidification.

ARMSTRONG MACHINE WORKS
909 Maple Street • Three Rivers, Michigan

ARMSTRONG *Steam Humidifiers*

TOUGH ASH

	FAS	FIF	No. 1C	No. 2C
4/4-in.	170	160	115	68
6/4-in.	190	180	130	75
8/4-in.	200	190	150	85

BASSWOOD

				No. 2A
4/4-in.	180	170	130	88
6/4-in.	190	180	137	90
8/4-in.	195	185	147	96

BEECH

				No. 2C
4/4-in.	145	135	110	65
6/4-in.	160	150	120	75
8/4-in.	170	160	130	80

BIRCH

4/4-in.	265	255	150	80
6/4-in.	275	265	160	85
8/4-in.	280	270	165	90

BUCKEYE

4/4-in.	135	125	100	65
6/4-in.	165	155	120	73
8/4-in.	170	160	125	78

CHERRY

4/4-in.	230	220	150	90
6/4-in.	250	240	170	95
8/4-in.	260	250	180	100

CHESTNUT

	FAS	No. 1C	FAS WHND	1C & B WHND
4/4-in.	170	120	137	127
6/4-in.	175	125	142	132
8/4-in.	180	130	152	142

HICKORY

	FAS	FIF	No. 1C	No. 2C
4/4-in.	125	115	78	53
6/4-in.	145	135	86	58
8/4-in.	170	160	90	60

HARD MAPLE

4/4-in.	205	195	135	80
6/4-in.	220	210	155	84
8/4-in.	225	215	160	90

SOFT MAPLE

4/4-in.	165	155	115	67
6/4-in.	175	165	135	69
8/4-in.	180	170	140	75

RED OAK—PLAIN

4/4-in.	185	175	120
6/4-in.	200	190	140
8/4-in.	215	205	145

WHITE OAK—PLAIN

4/4-in.	200	190	125
6/4-in.	220	210	145
8/4-in.	225	215	155

WHITE OAK—WHND

	FAS	FIF	C & B	No. 1C
4/4-in.	125	115	95	90
6/4-in.	150	140	120	115
8/4-in.	160	150	130	120

YELLOW POPLAR

	FAS	FIF	No. 1C	No. 2A
4/4-in.	210	200	138	88
6/4-in.	220	210	150	92
8/4-in.	225	215	155	95

POPLAR SQUARES

	FAS	No. 1C & SD
4x4-in.	245	175
6x6-in.	280	190
8x8-in.	340	240

WALNUT—STEAM TREATED

	FAS 6"&up	FIF 6"&up	No. 1C	No. 2C
4/4-in.	370	325	180	75
6/4-in.	395	350	215	90
8/4-in.	420	375	235	95

Walnut list reflects average fob mill, all areas. Basing point not generally observed.

NORTHERN HARDWOODS

Estimate of present f.o.b. Wausau, Wisconsin mill point average market prices to consuming trade on band-sawn Northern Hardwoods in carload quantities, random widths and lengths, rough air dried and graded in accordance with NHLA rules on inspection. Prices in dollars per M ft. On straight cars of upper bracket grades premiums are frequently being paid.

BROWN ASH

	FAS	No. 1C	No. 2C
4/4-in.	155	107	75
6/4-in.	165	122	85
8/4-in.	170	132	90

BASSWOOD

4/4-in.	191	131	80
6/4-in.	201	141	90
8/4-in.	206	151	98

BEECH

4/4-in.	145	100	68
6/4-in.	160	115	78
8/4-in.	165	120	80

BIRCH

4/4-in.	296	151	81
6/4-in.	306	166	91
8/4-in.	311	181	100

ROCK ELM

4/4-in.	150	130	66
6/4-in.	160	140	76
8/4-in.	165	150	81

SOFT ELM

4/4-in.	140	120	72
6/4-in.	150	130	83
8/4-in.	155	138	87

HARD MAPLE

4/4-in.	196	131	78
6/4-in.	206	141	81
8/4-in.	216	151	83

SOFT MAPLE

4/4-in.	160	125	75
6/4-in.	175	135	85
8/4-in.	190	145	93

RED OAK

4/4-in.	186	126	78
6/4-in.	196	146	83
8/4-in.	206	156	88

it's the "cut" that counts

Yes . . . in diamonds or FINE WOOD PARTS . . . it's the cut that counts. Gamble Brothers' wood parts are made to your *exact* specifications . . . fully- or semi-machined, solid or laminated . . . thoroughly kiln-dried to minimize shrinkage and warping.

With the help of Gamble Brothers' superior engineering ability, equipment and facilities, your wood needs can be furnished quickly and economically, as you need them, *without sacrifice of quality or the most minute detail.*

So remember . . . when precision counts . . . write or phone GAMBLE BROTHERS!

Engineered Wood Parts in Southern and Appalachian Hardwoods, Walnut, or Mahogany.

WRITE OR PHONE TODAY!

Engineered Wood Parts in Southern and Appalachian Hardwoods, Walnut, or Mahogany.

GAMBLE BROTHERS, Inc.

Offices and Main Plant: Louisville 9, Ky.
DIMENSOWOOD Division: Montgomery, Ala.

GAMBLE BROTHERS GB GUARANTEED BOND INCORPORATED

Decorate
Next Year's Toy Line with MEYERCORD Decals

New metal doll clothes wardrobe featuring pink and blue fawn and bear decals produced exclusively by MEYERCORD for the manufacturer, Harris-Hub Bed and Spring Co., Cicero, Ill.

One of the leaders in the extensive line of toys made by Harris-Hub Bed and Spring Co.

MEYERCORD Decals add color, interest, beauty and SALES APPEAL

Children of all ages love toys most that are decorated with colorful designs . . . animals, clowns, cowboys or what have you! And with all hands and minds turned towards designing and producing next year's toys . . . the problem of what, how and where to decorate looms large. Whether you're building a little girl's item . . . like the wardrobe shown above . . . or rugged trucks, trains or cars for the boys . . . Meyercord Decal Product Decorations can solve your problem speedily and completely.

Meyercord offers a complete variety of stock design Decal Decorations in a full selection of sizes and subjects. Or let Meyercord's design and creative staff suggest custom Decal Decorations, produced specifically for your needs. Stock or special, Meyercord Decals help your toys *sell!*

Meyercord Decals are easily, quickly applied at production line speed . . . available for any commercial surface or finish. Our engineering service is available to assist in your production department.

FREE—Full Color Catalog of Stock or Special Decals

Send for Meyercord Decal Decoration catalog . . . features hundreds of newest stock designs and complete guide for planning custom decals. Write on company letterhead, please. If you prefer, send a sample or description of your product for specific recommendation.

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World's Largest Decalcomania Manufacturers
DEPT. L-408, 5323 WEST LAKE STREET, CHICAGO 44, ILLINOIS

WOOD PUZZLERS

This department is designed to help find answers to your production and sales problems. Let us know what information you need. Experience has shown that other readers may be able to help you.

124—Plywood Bases for Baskets

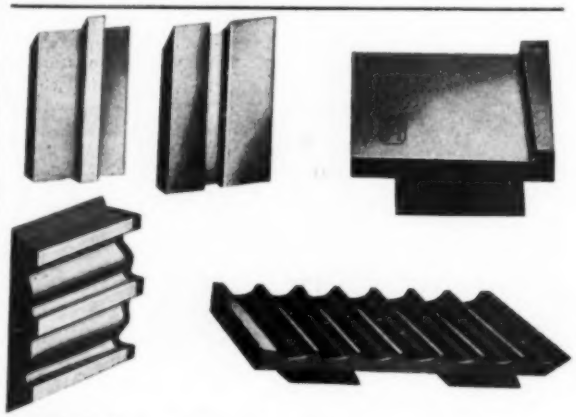
Through channels which may be known to you through your periodical, will you kindly advise where we might purchase plywood bases for baskets at the lowest possible cost. These baskets are rectangular, round and oval, in various sizes. Holes are bored around the perimeter for the uprights in the basket. We would like to be supplied with the sizes desired, already bored. (Ohio)

125—Hardwood For Carving

One of my customers wishes to purchase some pieces of hardwoods for carving which are thicker than the dimensions stocked by my regular suppliers. Can you give me the names of a few suppliers from whom I can get hardwoods suitable for carving in 8 x 8 in., 9 x 9 in., or 10 x 10 in. (Texas)

126—Random Length Maple Strips

We have 100,000 ft. of maple strips in random lengths 30 to 60 in., bundled and kiln dried, varying from 1⅛ in. x 2 to 1¾ in. x 2. Some dressed on three sides, all dressed on two sides. Inquiries invited, preferably carload lots. (N.Y.)



MILLED-TO-PATTERN BITS
Maintain Pattern for Uniform Quality

Milled bits assure you of uniformity of patterns. Milled bits are easily sharpened by grinding the bevel, and when formed jointer stones are used, it tends to keep every bit in the cut. Milled bits are engineered to meet your specific problems and will give you exacting and quality production.

Yates-American
BELOIT, WISCONSIN

WHAT DOES FIRTH STERLING OFFER YOU?

(ANSWER NUMBER 3)

UNBIASED RECOMMENDATIONS

Producing *tools* and *tool materials* for the cutting, shaping and forming of metals is *major* business at Firth Sterling. Hence, capacity to serve you best necessarily embraces "full line tooling" . . . high speed tool steels *and* tungsten carbides, or *both* as needed.

So, you can count on *unbiased* tooling recommendations when you make Firth Sterling your *one* source of supply for *complete* shop tooling needs. We have no axes to grind!

What are the advantages to you?

1. An integrated tooling program that saves you money by matching tools to applications, without temptation to apply more expensive tools than may be necessary.
2. Improved production from wider selections. A choice of 97 different grades of high speed steels and tool and die steels *and* a dozen grades of carbides in everything from die nibs to an almost unlimited selection of standard and special carbide tools and tips.
3. The purchasing economies inherent to buying from one source of supply instead of from several.
4. The finest "packaged" tool line today for easy handling, stocking, identification in the tool crib, and inventory control.
5. The consistently high quality assured by 64 years of leadership in development of special purpose steels and 24 years of pioneering in carbide and powder metallurgy applications.

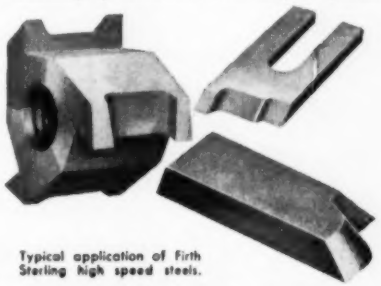
Makes sense, doesn't it? Call a Firth Sterling representative, or phone the nearest one of our 87 distributors.

Firth Sterling Stands for Metallurgical Achievement—Past, Present, Future

NO AXE TO GRIND!

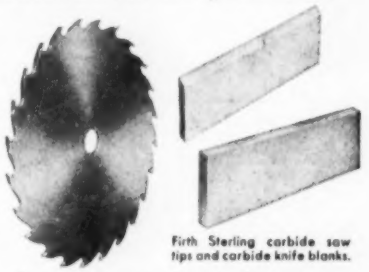
Both Steel and Carbide have their place in woodworking tooling. Firth Sterling has 'em both!

Tool manufacturers and their customers can get exactly what they need and save time and money, when they specify Firth Sterling. For Firth Sterling produces *both* high speed



Typical application of Firth Sterling high speed steels.

tool steels, in all grades required by the woodworking industry, and standard or special shape carbide tips and blanks for saws, milling cutters, knives, and special tools.



Firth Sterling carbide saw tips and carbide knife blanks.

Consult your tool manufacturer . . . your regular source of supply. He can get prompt service from manufacturing facilities and commodity stocks in Pittsburgh on both steel and carbide.

CALL YOUR FIRTH STERLING REPRESENTATIVE . . .

If you have a tooling problem. He can give you unbiased recommendations . . . either for steel or carbide as the job requires!

P-3

Firth Sterling

— INC. —

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PRODUCTS OF FIRTH STERLING METALLURGY

High Speed Steels
Tool & Die Steels
Stainless Specialties
High Temperature Alloys
Sintered Tungsten Carbides
Firth Heavy Metal
Chromium Carbides
High Temperature Cermets

New Type Plywood From Waste in Final Development Stage

A revolutionary new type of plywood made basically of wood waste is now in the final stages of development at the Wilco Research Laboratory, recently established by Wilco Machine Works, Inc., in Memphis, Tenn.

Elmendorf Research, Inc., of Chicago, developer of the new panel, called "Nu-Plywood," is conducting the present tests in Memphis to perfect the process and develop the machinery for manufacturing. (The process was first described in an article, "New Process for Making Hardwood Veneer Panels," published in Wood & Wood Products for December, 1952.)

Lloyd Johnson of Duluth, Minn., a timberman who is backing the project, said that after more than three years of experimental work it is "now ready for large-scale pilot plant manufacture."

Armin Elmendorf, president of the research organization, listed a few uses of the new synthetic board as furniture, wallboard and trailer linings. He pointed out that the new board will cost less to manufacture than conventional plywood, and that

PANEL of "Nu-Plywood" being inspected by (left to right) Lloyd Johnson, Armin Elmendorf and Daniel Copp

for a given log the new process will yield from three to five times more footage.

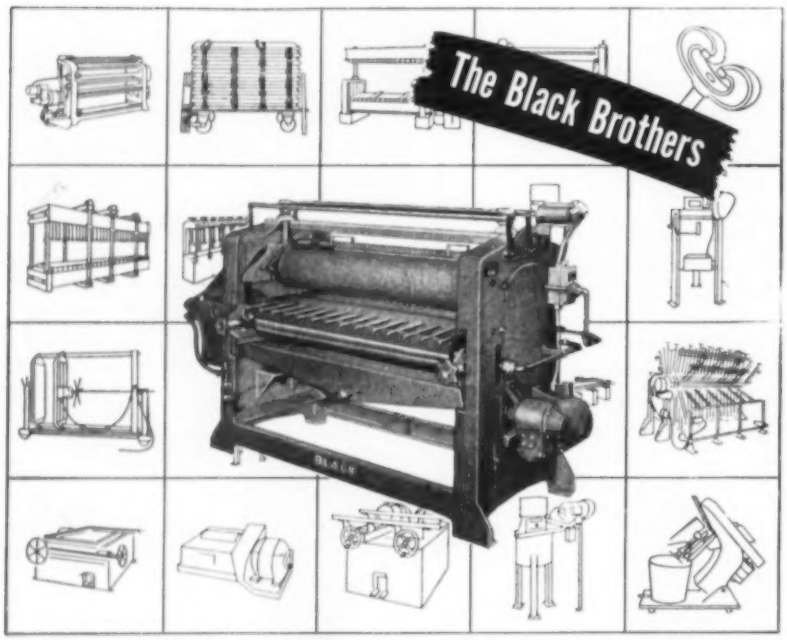
"Therefore," Mr. Elmendorf noted, "the new process is a conservation measure which will help to save the timber resources of the country suitable for conversion into veneer."

Further conservation will be accomplished through using up wood waste which is now burned. Mr. Elmendorf explained that the core of the new panel is made of sawmill waste such as sawdust, shavings, edgings and trimmings.

The Wilco Research Laboratory has been set up to meet the need for full-scale experimental work in the laminating, hardboard and chipboard fields, according to Richard O. Wilson and Daniel N. Copp, heads of Wilco Machine Works, Inc. Basic equipment for the lab includes a five-opening 100 by 66-in. hydraulic hot plate press, glue spreaders, mixers, chip pulverizers and testing instruments. To insure a ready supply of wood particles, the laboratory is located at the Hartwell Brothers handle manufacturing plant.

FIRST "NU-PLYWOOD" LICENSE TO SOUTHERN PLYWOODS, INC.

Elmendorf Research, Inc., announced last month that one of the South's top hardwood plywood producers, Southern Plywoods, Inc., Greenville, Fla., had been granted an exclusive license to manufacture "Nu-Plywood" in the 8-state area comprising Florida, Georgia, Alabama, Mississippi, Louisiana, North Carolina, South Carolina and Arkansas. Julius J. Stern, president of Southern Plywoods, Inc., said he is letting contracts for the required new building and equipment and anticipates pilot production early in 1954.

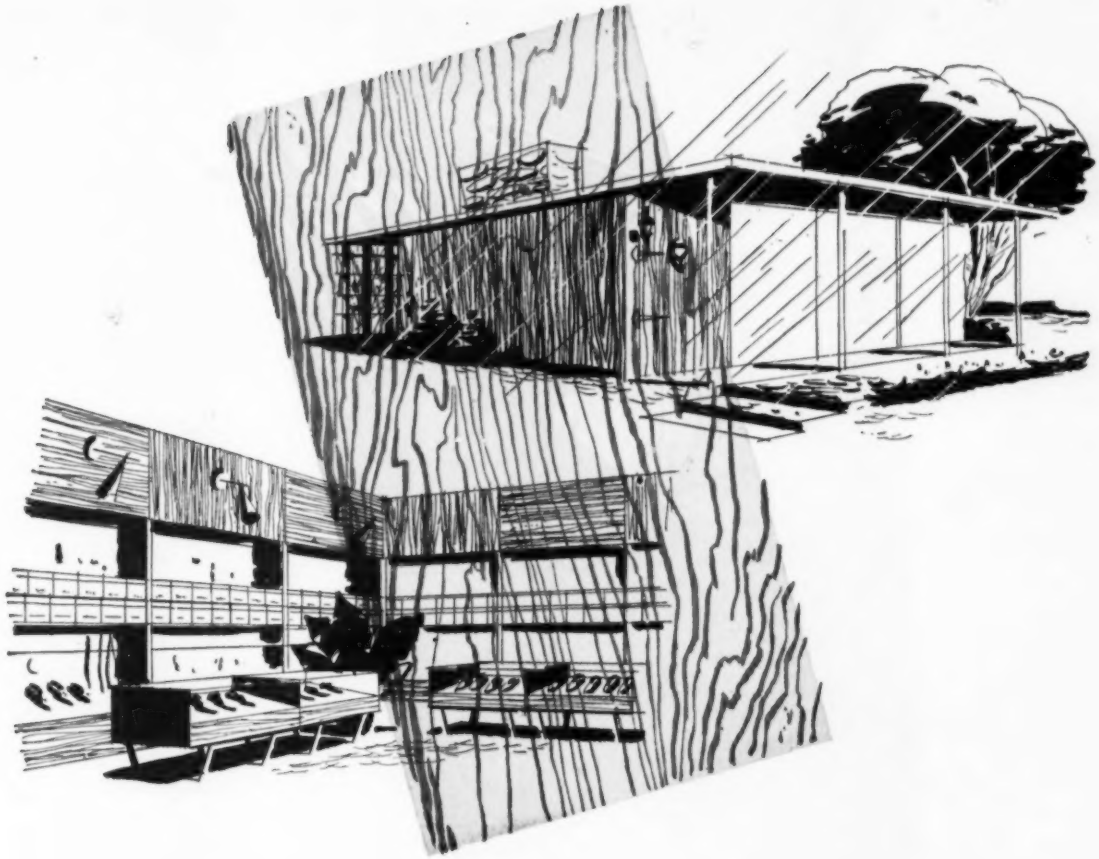


A Complete Line of Laminating & Gluing Equipment

Black Brothers manufacture a complete line of laminating and gluing equipment of nationally recognized superiority. Illustrated above is a No. 22-D resilient roll, ball bearing glue spreader equipped with water cooled doctor rolls as an optional extra for use with quick setting glues. Gluing rolls are deeply covered with fine synthetic rubber, and are specially grooved to control the amount of resins deposited and to conform to irregularities in the veneer. Accurate, heavy duty ball bearings are sealed to keep lubricants in, and dirt and glue out. Black's 22-D Spreader for resins, casein, and other cold glues is unmatched in speed, economy, accuracy, cleanliness and quality production. Write for details today . . . or let us send you a catalog on the complete Black line.

"If It Is Gluing Equipment - We Have It"

THE BLACK BROTHERS CO., INC.
MENDOTA, ILLINOIS, U. S. A.



To make ONE plywood for both interior and exterior use — at a competitive price* — use Melurac® Resin 300

** To make a better quality plywood at a competitive price, take advantage of all these money-saving features of* MELURAC 300:

1. FEWER REJECTS. Although glue line cost per 1000 square feet is higher than with some other glues, manufacturers have saved money because of the low number of rejects.

2. EASY HANDLING AND MIXING. Can be used without catalysts. MELURAC 300 is supplied as a free-flowing dry powder. Only water need be added.

3. NONSTAINING. MELURAC 300 is clear and colorless . . . quick setting . . . nonstaining. You can use thinner veneers and lighter woods.

4. LONG WORKING LIFE. When properly prepared, MELURAC 300 has a usable life of more than 10 hours at 90° F. Glue loss is cut to a minimum.

5. LONG ASSEMBLY TIME. Under normal conditions, veneers spread with MELURAC 300 can be stored several days, if necessary, before pressing. Avoids need for precure.

6. MODERATE CURING TEMPERATURE. Optimum pressing temperature is only 240° F. . . . minimizes "blows."

7. FAST CURE. With Cyanamid's Hardener M-325, the cure rate of MELURAC 300 is virtually as fast as Urea resin adhesives.

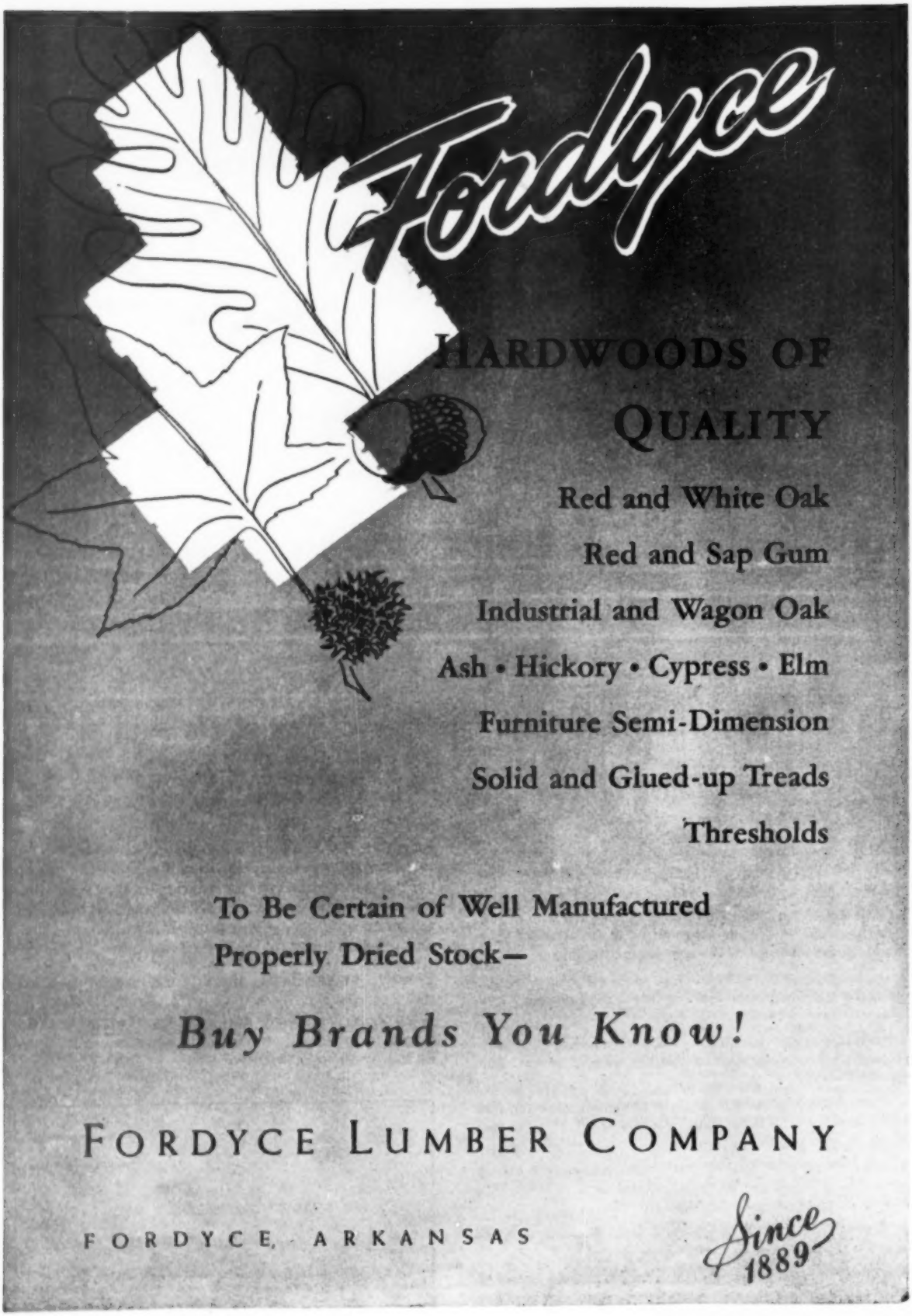
MELURAC 300 provides a completely waterproof, boil-resistant glue line for high quality plywoods—flat or curved, light or heavy, for interior or exterior applications. This resin combines the advantages of both melamine and urea . . . enables you to streamline production and realize important savings.

Want to build a better line? Want to give your competitor a real run for the orders? MELURAC 300 will give you the answer! Send us the details of your operation, or ask to have a Cyanamid representative call. We will be happy to work with you.

AMERICAN Cyanamid COMPANY

PLASTICS DEPARTMENT

30A Rockefeller Plaza, New York 20, N. Y.


Fordyce
HARDWOODS OF QUALITY
Red and White Oak
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Furniture Semi-Dimension
Solid and Glued-up Treads
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To Be Certain of Well Manufactured Properly Dried Stock—
Buy Brands You Know!
FORDYCE LUMBER COMPANY
FORDYCE, ARKANSAS
Since 1889

PATENT DIGEST

Saw Carriage

C. Blickenderfer, Jr. and W. S. Brownfield (to Weyerhaeuser Timber Co.). U. S. 2,641,288, June 9. In a saw carriage for a lumber trimming machine, a pair of spaced saws, an indexing latch, a lifting mechanism, and number engaging means.

Bark Removal

J. B. Merrifield (to J. B. Fuller). U. S. 2,641,289, June 9. Bark removing apparatus having log rotating and log advancing peeler heads.

Veneer Cutter

R. S. Burnett. U. S. 2,642,136, June 16. Veneer cutter including driven strip advancing mears, a clipping knife, electro-magnetic clutch means, brake means for momentarily stopping the knife after each cut, means for measuring each cut, and means for varying the cut length.

Wood Board

F. Fahrni. U. S. 2,642,371, June 16. Board comprising a core layer of random wood particles, a binder distributed so as not to fill all air spaces and an outer layer of flat wood shavings.

Square Hole Cutter

A. Francescatti and R. Micek. U.S. 2,645,255. A chain-mortising square hole cutting attachment for drill presses.

Veneer Routing

C. A. Sherman. U. S. 2,643,689, June 30. In a routing machine, a pattern cam, a driven tool, material supporting means, a clamping plate, material feeding means, and a patch holding means swingably movable toward the patch area.

Edge Gluing

D. L. Schubert (to Plywood Research Foundation). U. S. 2,644,496, July 7. Edge gluing device for gluing a continuous series of pieces of random width stock to form a continuous sheet.

Router

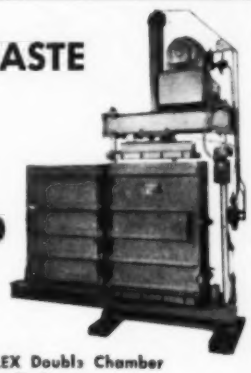
E. V. Bennett and H. Renn (to M and M Wood Working Co.). U. S. 2,644,495, July 7. In a routing machine for removing defects from wood, a routing tool mounted vertically and horizontally transversible, a suction housing enclosing the tool, and means to transverse the tool in response to engagement of said housing with a workpiece.

Pocket Routing

L. White. U. S. 2,643,690, June 30. In combination, a table for supporting a flat panel, and a pocket router mechanism comprising a main frame, a guide frame, a motor carrying frame having a motor having the router tool fixed to cut a predetermined pocket.

Continued on page 48

TURN WOOD WASTE into PROFITS with a CONSOLIDATED Baling Press



Package and sell shavings, fibers and chips to paper mills — hardboard and molded product makers — poultry and dairy farmers — nurserymen and florists — others.

DUPLEX Double Chamber Hydraulic Press

Loads & Compresses Simultaneously

- **The DUPLEX will produce over 35 bales (100 lb. each) per hour.**
- **These bales are small and dense for lowest shipping and handling costs.**
- **Hydraulic presses assure lowest operating and maintenance costs.**

Proper packaging means baling to insure uniformity of material and low costs. CONSOLIDATED hydraulic baling presses give you speedy, low-cost baling of your shavings, fibers and chips, converting waste products into extra income. There is a CONSOLIDATED press to fit your needs.

Write for full details and catalog.

CONSOLIDATED BALING MACHINE COMPANY

Sales Division of

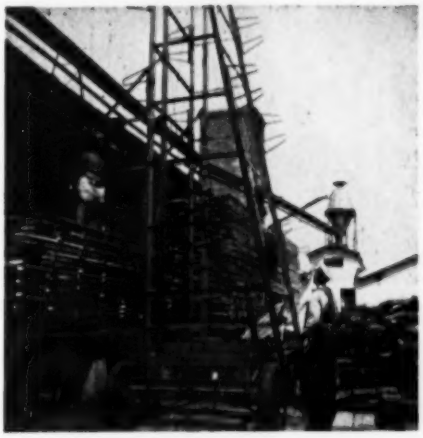
N. J. Cavagnaro & Sons Machine Corp.

400-404 Third Avenue — Brooklyn 15, New York

Standard STACKERS

☆ **INCREASE YOUR PRODUCTION**

☆ **CUT LABOR COSTS**



● Standard Stackers, for yard or kiln load stacking, are especially designed to increase production, eliminate labor fatigue, and cut labor costs. *They actually pay for themselves in labor savings alone!* Besides doing the job quicker with fewer men, they reduce labor turnover by making lumber handling easier.

Two different types of sturdily-constructed Standard Stackers are available: the gasoline or electric powered Standard Workhorse (shown above), and the Standard Green Lumber Stacker. If neither of these two famous Standard Stackers answers *your* problem, we'll design one that does!

For additional information, write for free illustrated Standard Catalog.

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Engineers and Manufacturers Since 1887

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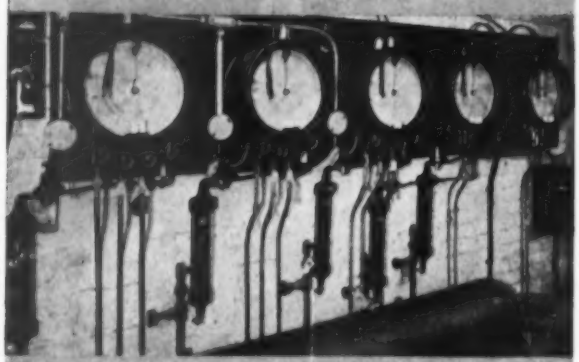
FOR MORE EFFICIENT

REVERSIBLE FAN KILNS...



Foxboro Controllers on reversible fan kilns, specified and installed by Standard Dry Kiln Co.

. . . Use a Controller that *KEEPS STEP*

Your reversible fan kiln can be worked to greater capacity, at lower cost, with a Foxboro Controller designed especially for this type of kiln. Moreover, drying quality will be much improved.

Combination Wet-and-Dry Bulb and second Dry Bulb used for this installation.

HERE'S HOW IT WORKS

This Foxboro Controller for Reversible Dry Kilns has *dual dry bulbs*, installed one on each side of the load. Both are connected to the same recording pen which automatically registers the temperature on the entering air side, regardless of fan direction. No need to adjust drying schedule to compensate for temperature drop through the load. Unique *duplex wet bulb control* automatically opens either spray valve or dampers as required, but never both at the same time . . . saves steam!

Preferred by most operators and furnished as standard by most kiln-builders, Foxboro Control is available for new or existing kilns of all types. For details write The Foxboro Company, 1311 Norfolk St., Foxboro, Mass., U.S.A.

FOXBORO AUTOMATIC KILN CONTROL

Debarker

A. G. Rockwood (to Worthington Corp.). U. S. 2,643,691, June 30. In a hydraulic log debarker an entrance conveyor for moving logs into and partly through the debarker, means for preventing displacement of logs on the conveyor comprising a pressure member, an endless log engaging chain carried by the pivoted frame, and an exit conveyor for moving logs from the debarker.

Adhesive

W. Schoen (to Masonite Corp.). U. S. 2,643,953, June 30. Preparing a water soluble adhesive by hydrolyzing lignocellulose under high temperature and pressure in the presence of moisture, recovering the water-soluble extract, drying, slurrying with methanol, removing methanol mechanically, washing with an aliphatic solvent, and drying the residue.

Lignocellulose

R. V. Williamson (to United States of America). U.S. 2,645,587, July 14. Subjecting a dry mixture of fibrous lignocellulose and a thermoplastic binder to heat in the absence of oxygen to cause evolution of smoke and heating until smoking ceases and then pressure molding at a lower temperature.

Wood Wall Structure

H. R. Davis (to H. A. Sanders). U. S. 2,644,204, July 7. In a wood wall structure, a series of planks having over-lapping edges, plates at the opposite ends of the planks and means fastening each plank to the plates adjacent one end.

Preserving Wood

R. M. Lindgren. U. S. 2,643,957, June 30. Preserving wood by culturing Trichoderma viride on green wood having inorganic fluoride applied to the surface whereby the permeability of the wood is increased and impregnating with a liquid preservative.

Log Shaper

E. Wilson. U.S. 2,645,253, July 14. In a log shaping machine, a log receiving cylinder, log holding carriages, a ram for driving a log through the cylinder, means for journaling and rotating the cylinder, and rotary cutters.

Shaper Attachment

O. P. Smith. U.S. 2,645,256, July 14. Attachment for a wood shaper comprising a bearing mounted for vertical adjustment in the guideways, cover plates to retain the bearings, a driven shaft mounted in the bearing and cutter heads mounted on the shaft.

Lignin Extraction

J. H. Richmond, R. M. Boehm and H. R. Hunt (to Masonite Corp.). U.S. 2,645,633, July 14. Extracting lignin from hydrolyzed lignocellulose comprising slurrying with a formic acid-water azeotrope, distilling the azeotrope, recovering the lignin, and reusing the azeotrope for extraction of additional material.

Lumber Shake

R. A. Wilde. U.S. 2,645,825, July 21. A wooden lumber shake consisting of a rectangular piece of board having a tongue on one edge and a groove on the other, the surface being fluted.

YA® *Yates-American*

NEW DESIGN CARBIDE TIPPED SAW

for accurate cuts of laminated and plastics materials...

*Patented

. . . the growing use of laminated materials and plastics has created a need for a saw that can successfully make accurate cuts in these materials. This new saw by Yates-American "fills the bill," for it will produce cutting results once considered impossible. Standard sizes include 10", 12", 14", and 16"; other sizes can be made special for your particular operation. Your inquiry will receive the attention of our Carbide Specialists.

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NAMES and EVENTS

NHLA Convention Held

Nearly 2,000 members and guests attended the 56th annual convention of the National Hardwood Lumber Assn. Oct. 5-9 in Chicago, a highlight of which was a visit to the "World of Hardwoods" exhibit which has attracted more than 1¼ million visitors since its opening at the Museum of Science and Industry last March.

Officers re-elected for 1953-54 were Harry D. Gaines, St. Louis, president; James C. Walsh, Chicago, T. M. Millet, Louisville, and Franklin T. Griffen, Chicago, vice-presidents; and Joseph L. Muller, Chicago, secretary-manager.

Elected to fill vacancies on the board of directors were: Albert R. Copeland, Copeland Lumber Co., Chicago; Charles Cathey, Cathey-Williford-Jones Co. Memphis; and George A. Houghton, Goodman Lumber Co., Goodman, Wis. Copeland and Cathey's terms will expire in 1956, while Houghton fills an unexpired directorship ending in 1955.

Featured speakers during the convention were: K. O. Roos, Canadian Lumbermen's Assn. president and general manager, Booth Lumber Ltd. of Quebec; George A. Bowie, Public Relations department, Firestone Tire and Rubber Co.; H. A. Hanlon, Cotton-Hanlon, Inc.; and Gene Flack, sales counsel and director of advertising, Sunshine Biscuits, Inc.

Woodwork Machine Group Meets, Hears Sligh and Wiken

An assertion that the nation's national economy is still expanding and a warning of increasingly stiff competition from abroad were the highlight topics during the fall meeting of the Association of Manufacturers of Woodworking Machinery September 24-25 in Chicago.

Charles R. Sligh, Jr., president of the NAM and of the Sligh Furniture Companies, spoke on the new challenge facing industry today. He painted a promising future for aggressive management.

Back from a three-month tour of more than 50 industrial plants in 11 European nations, Christy A. Wiken, Rockwell Mfg. Co. vice-president of engineering and research, reported that "European firms are hungrier than ours, and with their low labor rates have a real opportunity to enter our market."

"I believe our woodworking industry is slightly ahead of the European in engineering and design," Wiken added, "mainly because our larger market permits more automatic machinery and more jigs and fixtures to produce them. He warned, however, that any complacency on our part with respect to design, or failure to replace obsolete machine tools could easily tip the scales in their favor.

Manufacturers Reserve Space

More than half the space for exhibiting machinery has been reserved for the Woodworkers Industry show May 5-7, 1954, at Grand Rapids, Mich., according to Hiller & Stuart, conductors of the show.

Early interest in this first full scale exhibition of woodworking machinery and equipment since 1949 is heightened by the fact that the national meeting of the Forest Products Research Society will be held in Grand Rapids at the same time.

Sanding Demonstration Set

Recent advances in sanding machinery will be demonstrated to production and finishing executives of

With extended table at right and removable roll-table at left. No. XJW.
Tannewitz "XJ"
FINEST THING IN MITRE SAWS!
Choice of 5 different tables enables you to obtain a mitre saw that matches EXACTLY your production requirements. Does away with awkward working conditions, steps up production, and saves time and money. Nothing like it. Moderately priced. Write for Bulletin XJ.
Sliding left section top and extended table at right. No. XJSW.
Standard solid table. (No. XJ) or sliding left section. No. XJS.
THE TANNEWITZ WORKS
GRAND RAPIDS, MICHIGAN
Extended table at right — extended sliding table at left. No. XJSW — J-430.

furniture manufacturers Nov. 3-5 at High Point, N. C.

Facilities of its High Point branch are being extended to machine builders by Behr-Manning Corp. of Troy, N. Y., industrial abrasives manufacturer, which will act as sponsor and host at the exhibit.

New and improved machines developed by more than 20 manufacturers will be displayed.

Steel Strapping Winners Named

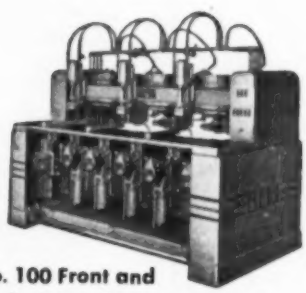
Acme Steel Co., Chicago, has announced winners of its industry-wide flat steel strapping contest conducted to help all industry do a better job of packaging, shipping and handling material.

First prize ($1,000 value) went to H. W. Davies of the Port of Port Angeles, Wash.; second prize ($500) to Howard D. Elsasser of W. A. Riddell Corp., Bucyrus, O.; third prize ($250) to Carter Anderson of Boeing Airplane Co., Seattle. Fifteen additional prizes of $100 each were also awarded, including a number to employees of wood using industries.

Four judges distinguished in the packaging, shipping and material handling field reviewed a total of 583 entries.

You can Bore, Notch and Trim this leg in 3 seconds with a BELL 100

1200 legs an hour! . . . All holes drilled in **perfect** alignment — all notched **exactly** alike — ends trimmed with **precision!** Figure how your costs could nose-dive with production like **that!** The 100 handles front and back posts, table leaves, many other jobs. Set-up average 18-22 minutes. Let us give you the whole picture.



No. 100 Front and Back Post Borer

Bell WOODWORKING MACHINERY

THE BELL MACHINE COMPANY

78 Jackson Dr., Oshkosh, Wisconsin

FPRS Nov. Meeting at Chicago

A discussion of the innumerable applications in which wood is superior to such materials as plastics, light metals and structural iron will highlight the annual fall meeting of the Midwest Section, Forest Products Research Society, Nov. 12-13 in Chicago. General chairman is T. J. Connelly, president, Dean Co., Chicago.

Program chairman is George Stanley, chief engineer of Pressed Steel Car Co., Chicago. Local arrangements are being made by Joseph Allegretti of the Masonite Corp., Chicago, with the assistance of C. H. White, secretary-manager of the American Walnut Mfrs. Assn.

FPRS Meeting at Grand Rapids

The Great Lakes Section, Forest Products Research Society will discuss problems and benefits of high frequency in the woodworking industry at its November 3 meeting at the Hotel Rowe, Grand Rapids, Mich.

Among authorities scheduled to present HF facts and answer questions from the floor are Laurence Clark, Perkins Glue Co.; Paul Zottu, Electronic Heating Corp.; William Berkey, Westinghouse Electric Corp.; Sam Tamminga, Hekman Furniture Co.; W. H. Hickock, Girdler Corp., and others.

Lufkin Host to FPRS Meeting

"Profitable Utilization of Wood Waste" will be the theme of the Deep South Section, Forest Products Research Society meeting November 9-10-11 at Lufkin, Texas. Chairman Paul Kramer of the Texas Forest Service states the program has been arranged to bring out practical answers to technical and management problems facing the wood industry in the deep south today.

One session, devoted to the use of sawmill residues for pulp chips, will concentrate on various chippers and debarkers on the market. Among other topics will be electric heating of veneer logs and new developments in composition board production.

FPRS Studies Logging, Milling

A logging and milling committee, composed of industry, federal and state research organizations, and manufacturers of logging and milling equipment from the United States and Canada, has been organized by the Forest Products Research Society.

The committee has three main objectives: 1. To encourage and coordinate research in logging and sawmilling; 2. To disseminate the findings

SAWMILL MEN...

READ THIS LETTER:

BRICE LUMBER, INC.
P O BOX 15
ARCHER, FLORIDA

July 2, 1953

The Wheland Company
Chattanooga 2, Tennessee

Attention: Mr. L. H. Owens, Asst. Sales Manager

Dear Johnny:

Our modern Wheland Double Sawmill which you assisted us in designing and for which Wheland furnished the major items of machinery has now proven to be doubly profitable. The Wheland equipment is fast, dependable and economical to operate.

On the right hand side we have your 6 foot # 45 Band mill and # 371 carriage equipped with Cahoon Air Dogs. For cutting the best grade from our logs with the minimum of labor, we feel this is the ideal combination.

The high speed circular mill with Air Boss and Hammer Dog equipped carriage on the left hand side of our mill assures us of high production even in small logs.

Both carriages are driven by a steam shot gun feed which we believe is the most efficient installation possible for long, economical, and fast carriage travel.

Your accurate Wheland # 2½ D Edger speeds the lumber along to the fast automatic air operated # 47 drop saw trimmer. With the Wheland live rolls and transfers very little manual lumber handling is necessary in the mill.

We feel without a doubt we have one of the finest and most profitable sawmills in Florida. We are very pleased with the Wheland machinery and recommend the use of Wheland equipment to our sawmill friends all over the country.

Yours very truly,

BRICE LUMBER, INC.

C. L. Brice

C. L. Brice, President

WHELAND EQUIPMENT IS BEST FOR *Your Mill!*

Write or phone for detailed bulletins. An experienced WHELAND sawmill man will study your mill and recommend WHELAND sawmill equipment best suited to your needs

No cost or obligation on your part!

BRICE LUMBER, INCORPORATED, Archer, Florida

The WHELAND Company

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COMPLETE SAWMILLS AND AUXILIARY MACHINERY • CIRCULAR SAWMILLS — HEAVY, PORTABLE BAND SAWMILLS • EDGERS AND TRIMMERS • TRANSMISSION AND CONVEYOR MACHINERY

FOR OVER 80 YEARS THE FOREMOST NAME IN SAWMILL EQUIPMENT

of research in this field; 3. To cooperate with other FPRS committees working in allied fields such as wood drying, machining, gluing and education on common problems.

Among specific problems are the formulation of performance standards for small sawmills and a study of standards and specifications for pulp chips made from slabs and edgings. Particular attention will be paid to accurate and fair units of measurement for the purchase and sale of such chips.

Committee chairman is Fred C. Simmons, specialist in logging and primary processing of wood at the Northeastern Forest Experiment Station, Upper Darby, Pa. Chairman of the subcommittee on logging is Roswell D. Carpenter, Shreveport, La., consulting engineer; and the subcommittee chairman on milling is Milton H. Mater, Mater Machine Works, Corvallis, Ore.

Committee members: Cam Niederhoff, West Va. Pulp & Paper Co., Charleston, S. C.; David P. Thomas, U. of Washington College of Forestry, Seattle; Leland Hooker, Michigan College of Mining and Technology, Houghton; George Carr, Pacific Car and Foundry Co., Franklin Park, Ill.; Gerald F. Bell, Forest Products Laboratories of Canada, Ottawa, Ontario; Kenneth Compton, College of Forestry, State U. of New York, Syracuse; E. A. Clevenger, Corley Mfg. Co., Chattanooga, Tenn.; John Sims, W. T. Smith Lumber Co., Chapman, Ala.; Myron Krueger, U. of California, Berkeley; Bruce Mety, Southern Lumber Co., Warren, Ark.; W. J. O'Neill, U. of Missouri, Columbia; Henry F. Horton, Prescott Co., Menominee, Mich.; Joe Denton, Filer and Stowell, Inc., Milwaukee, Wis.

Use a **VB hot press** *with the new*

LOADING TABLE

for increased production

on your veneering and laminating operations

THE "VB" PRESS ALSO FEATURES:

- ALL ENCLOSED FRAME
- ALL WELDED STEAM HEATED PLATENS
- PRE-ADJUSTED WORKING PRESSURE
- COMPACT HYDRAULIC SYSTEM
- AUTOMATIC CONTROL PANEL

The new loading table is featured on the Single (one) and Double (two) Opening "VB" Hydraulic Hot Plate Presses. This revolutionary improvement speeds up the loading and unloading operations with a resulting increase in production.

Loading is done alternately from side to side, one load readied on the table while the load in the press is curing. When the Automatic Timer opens the press, the loading table with new load in position, is pushed into the press and another curing cycle is started. The cured load is removed from the table and another is made ready for the press without loss of time.

Write Today

Arrange to see a demonstration of this new money and time saving feature at our plant . . . we will also be pleased to send catalog and prices.

V.B Berthelsen ENGINEERING WORKS, INC.

P. O. BOX 1423 • LOCKPORT ROAD • JOLIET, ILLINOIS

Forestry Society Meets

Problems of salvaging economically some 4 billion feet of Colorado timber killed by the spruce beetle in recent years were aired at the Society of American Foresters annual meeting September 14-17 at Colorado Springs. Society President George L. Drake of the Simpson Logging Co., presided over general sessions attended by 450 registered foresters.

The next annual meeting will be held at Milwaukee, Wisconsin, in October, 1954, and the 1955 meeting is scheduled for Portland, Oregon.

Canadian Package Show Nov. 3

Registration for the 2nd Canadian National Packaging Exposition November 3-4-5 at Toronto, Canada, is expected to exceed 12,000. The Exposition is being held in conjunction with the annual conference of the Packaging Association of Canada.

Among the speakers will be R. F. Weber, general supervisor, Materials Handling Research, International Harvester Co., Chicago; W. W. Sederlund, supervisor, Technical Service, National Starch Products, Inc., New York City; and H. J. Vander Putten, supervisor, Cargo Loss and Damage Prevention, American Airlines.

Logging Congress Held

A mammoth parade on the final day brought another annual Lakes States Logging Congress to a close September 19 at Rhinelander, Wis. The 1954 Congress was awarded to Marinette-Menominee, the three day event being scheduled the third weekend in September.

The Timber Producers Association of Michigan and Wisconsin, sponsors of the Congress, took the occasion to elect Joseph Carlson of Iron River, Mich., its new president. Also elected were Mike Messner, Jr., of Houghton, Mich., as vice-president; Robert Ewing of Ironwood, Mich., treasurer; and J. J. Heinske of Ironwood, secretary-manager.

Missouri Logging Show Held

More than 5100 timber owners and sawmill operators attended the forestry, logging and sawmilling show October 1-2 at Maramec Springs,

Missouri. Visitors from seven states watched demonstrations of improved methods of harvesting and utilizing timber.

King Lumber Buys New Plant

King Lumber Industries of Canton, Mississippi, has announced the purchase of the Louisiana Central Lumber Co. flooring plant at Monroe, Louisiana. Facilities include two flooring units, dry kilns and power plant.

The purchase further diversifies the King Lumber Industries extensive operations in the south. The firm also operates a flooring plant, single band sawmill with resaw at Saint Francisville, La., a double band sawmill with resaw, a furniture dimension plant and creosote treating plant at Canton, Miss.

Vulcan Corp. Buys U. S. Bung

The Vulcan Corporation, Cincinnati, O., manufacturer for 43 years of hardwood products and producer of shoe lasts and wood heels, has purchased the United States Bung Mfg. Co., according to A. J. Giese, Vulcan president. Vulcan plans to continue producing bungs, spiles and deck plugs at the Bung plant facilities.

It's Maine Dowel Corp. Now

Effective October 1, the Maine Skewer and Dowel Corporation of Farmington, Me., changed its name to the Maine Dowel Corp., according to Fred B. Chadbourne, president. Reason for the change is that the firm no longer manufactures "skewers" and has greatly expanded production of varied dowel products.

New Allwood Sales Office

An industrial sales division has been established by the Oregon Lumber Co., Dee, Ore., to direct nationwide sales of Allwood hardboard, according to A. C. Lighthall, president. R. D. McDonnell is newly named sales manager with headquarters in Los Angeles. Industrial Allwood sales formerly were handled through the Simpson Logging Co., with whom Mr. McDonnell was previously associated in the hardboard division.

Finley Leaves Forestry Post

William C. Finley, who for nearly ten years carried on a successful industrial joint forestry program for the American Walnut Mfrs. Assn., the Veneer Assn., National Cedar Chest Assn. and the Aromatic Red Cedar Lumber Mfrs., has resigned, according to Burdett Green, Veneer Assn. executive vice-president.

Snow New NAFM Secretary as McCarthy Retires

JOHN M. SNOW has been elected executive secretary of the National Association of Furniture Manufacturers, succeeding John C. McCarthy who retired after 20 years with the association. Elected at the group's 25th annual meeting, Snow for the past five years has been secretary of National Sales Executives, Inc., New York City, and previously was general sales manager of the trade books division of Encyclopedia Britannica.

Offices of the group are in the Furniture Mart, Chicago.

Personnel Changes

DONALD R. GUTHRIE has been named assistant general manufacturing manager of the coated abrasives and related products division of Minnesota Mining & Manufacturing Co. Guthrie formerly was executive engineer in charge of engineering research, having joined the company in 1939.

CHARLES E. DEVLIN was appointed managing director of the National Plywood Distributors Association, effective Oct. 1, by Robert C. Whitmeyer, president.

Devlin, who will make his headquarters in Chicago, has a wide back-

for a fabulous finish...

JEWEL BRAND
Abrasive Belts

Finer finishing — sanding, smoothing, polishing — for all types of wood products.

ABRASIVE PRODUCTS, INC.
553 Pearl Street South Braintree 85, Massachusetts

ground in plywood and association work as well as experience in sales and distribution of building material.

ROY J. GAVIN, a Minnesota Mining & Mfg. Co. division sales manager in St. Paul, Minn., for the past five years, has been elected vice-president of the recently acquired Irvington Varnish & Insulator division. Gavin will move his headquarters from St. Paul to Irvington, N. J.

REAR ADMIRAL DONALD T. GILES, USN (Ret.), has joined Koppers Co., Inc. of Pittsburgh as a development engineer, according to W. P. Arnold, vice-president and general manager of the Wood Preserving Division. Admiral Giles will operate out of Atlanta, Ga., where he recently completed his active duty with the Navy.

NORRIS REDIKER, for the past 15 years associated in various executive capacities with United States Steel Export Co. here and abroad, has been appointed director of export sales for Georgia-Pacific Plywood Co., according to Gene Howerdd, vice-president.

Z. R. MEREDITH, noted accounting authority, has been named comptroller for the American Box Co., Cleveland, O., and its subsidiary, American Wood Products Corp., Marion, So. Carolina, according to George H. Kubes, president.

FRANK W. WALKER has been promoted by Motorola Communications and Electronics to sales manager of a western region composed of southern California, Arizona and southeastern Nevada. He will direct sales and service of fixed, mobile and portable two-way radio communications from offices in Los Angeles.

R. J. Samuelson

R. J. SAMUELSON was recently named vice-president in charge of sales of Greenlee Tool Co., division of Greenlee Bros. & Co., Rockford, Ill. This action by the Greenlee board of directors was in part recognition of Samuelson's 33 years with the company, past 10 of which he has been sales manager of the tool division.

A. H. Hawkinson

R. W. Stevenson

Also anounced were the appointments of A. H. Hawkinson as sales manager of the western division and R. W. Stevenson as sales manager of the eastern division.

BERT R. ROBERTS, JR. has been named secretary of Jackson Lumber Harvester Co., Brewton, Ala., by Howard J. Fimreite, president and general manager.

HUBERT R. CARLSON, owner and operator of the Carlson Saw & Equipment Co., Oklahoma City, for 12 years, has been appointed regional zone manager of the Southern Division of Rockwell Manufacturing Co.'s Delta Power Tool Division. His headquarters will be in Atlanta, Ga.

ROBERT M. BODKIN, active in a wide variety of lumber industry capacities for the past 17 years, has

WOODWORKERS
work wonders with Redwood

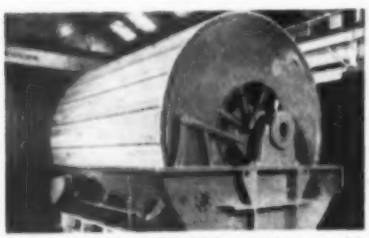
TO PRACTICALLY everyone in the woodworking field, from pattern maker to millwork manufacturer, California Redwood, with its wide range of uses, offers unique opportunities for profit.

Because of its grown-in properties—workability, durability, strength, light weight, dimensional stability, top paint retention—Redwood can do *more* jobs *better* than any other wood!

On this page you see a few of the ways the woodworking industry has capitalized on the unique characteristics of California Redwood. For complete information on specific uses, write California Redwood Association, 576 Sacramento Street, San Francisco 11, Calif.

DECORATIVE SIGN shows to advantage Redwood's high workability, beauty of grain and texture, and resistance to weathering, decay and shrinkage.

SASH AND FRAMES in industrial buildings are subject to critical shrinking, decay and leakage of heat. Redwood offers lowest shrinkage, high decay resistance and low thermal conductivity.



GIANT DRUM FILTER, modern gold-miner's pan, separates gold-bearing solution from waste mud. Drum shell and staves are of Redwood, because Redwood is light in weight, resists chemical action, stands up under intermittent wetting and drying.

This Association, a clearing house for Redwood data, includes fifteen of the nation's leading Redwood lumber producers: Coastal Plywood & Timber Co., Eureka Redwood Lumber Co., Hammond Lumber Co., Holmes Eureka Lumber Co., Hulbert & Muffly Lumber Mill, Northern Redwood Lumber Co., The Pacific Coast Company, Pacific Lumber Co., Rockport Redwood Co., Simpson Logging Co., Union Lumber Co., Warm Springs Redwood Co., Willits Redwood Products Co., Wolf Creek Timber Co., Inc., Arcata Redwood Co.

Not when you use KIMPAK* 301!

New KIMPAK 301 is the practical solution to surface damage to furniture finishes during shipment. KIMPAK 301's ability to shield the fine finish from abrasive high spots on crate blocking and bracing members and similar high spots on the inner walls of containers makes it the ideal protective agent in a furniture pack. KIMPAK 301 costs no more than ordinary interior packaging materials. Check for yourself how new KIMPAK 301 prevents the two major causes of pressure-marking:

1. Surface irregularities of the container wall or crate. KIMPAK 301 literally "flows" into low spots . . . compresses under high spots. The compressibility of KIMPAK 301 smoothes out any irregularities of the container wall. And the result of this is smooth, level, non-abrasive surface that protects the finish of your furniture in transit.

2. Surface irregularity or "lumpiness" of the packaging material. KIMPAK 301 is smooth, soft, clean and uniform in thickness. It is never lumpy or scratchy. The unusual softness eliminates "hard wrinkles" which contribute to pressure-marking.

Pressure-marking is but *one* of many problems encountered in furniture packaging. These problems are solved at lower cost when new KIMPAK 301 is specified. For more details, contact the local KIMPAK distributor in your area—or mail coupon below.

SPECIFY KIMPAK 301 TO SOLVE THESE INTERIOR PACKAGING PROBLEMS:

Scratching
Pressure-marking
Staining
Chafing
Conformability
Ease of handling
Disintegration

Whatever your protective interior packaging requirements, there is a Kimpak specification that does the job...better!

KIMPAK INTERIOR PACKAGING
*T. M. REG. U. S. & FOREIGN COUNTRIES

A Product of **Kimberly-Clark**

KIMBERLY-CLARK CORPORATION, Dept. WW-113
Neenah, Wisconsin

We would like to learn how new Kimpak 301 can provide better protection at lower cost for our products. Please send complete information.

Name.....

Firm.....

Street Address.....

City..... *Zone*..... *State*.....

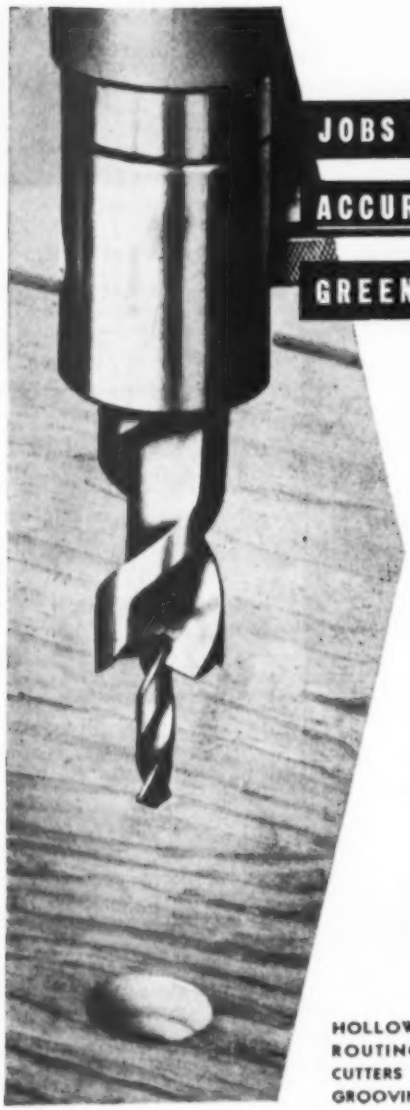
been appointed vice-president of the Western Hardwood Lumber Co. of Los Angeles. He will direct expanded sales and customer service activities.

Jed Davison

JED DAVISON has been appointed sales manager of Morgan Mfg. Co., Black Mountain, N. C. manufacturers of woodworking dimension stock. Davison was for five years quality control engineer and plant representative at the Morgan plant. He was formerly associated with the Davison Wood Products Co. of Waterbury, Vt., and with Munising Woodworking Products Inc. as eastern representative.

DAVID E. STALTER, for six years a senior consultant on the diagnosis and solution of industrial marketing problems for McKinsey & Co., has been appointed to the recently created post of general sales manager of Titan Chain Saws, Inc.

He will be responsible for the company's American and foreign marketing operations and will divide his time between the Seattle factory and a newly established office in New York.


JOBS DONE SMOOTHLY,
ACCURATELY WITH
GREENLEE COUNTERSINKS
Countersink precisely as you want to . . . swiftly, smoothly with GREENLEE Adjustable Countersinks which let you set the lead drill at whatever boring depth desired. Wide range of sizes . . . three types: (1) with extension-lip type counter for boring flat-bottomed holes, (2) with beveled cutting edges corresponding to the taper of flat-head screws and (3) with beveled cutting edges to countersink for screw heads below the surface of the wood. Write for facts. Greenlee Tool Co., 2161 Herbert Avenue, Rockford, Illinois.
Ask for free Boring Chart for Wood Screws . . . simplifies tool selection
TOOLS FOR CRAFTSMEN
GREENLEE
HOLLOW CHISELS • MACHINE BITS • DRILLS
ROUTING BITS • MULTI-SPUR BITS • PLUG
CUTTERS • COUNTERSINKS • MAKERS OF TECO
GROOVING TOOLS FOR TIMBER CONSTRUCTION

Kimberly-Clark Exec Retires

F. A. Biederman

Frank A. Biederman, for 28 years connected with sales, advertising and sales promotion of industrial wadding products for Kimberly-Clark Corporation, Neenah, Wis., has announced his retirement and moved to Phoenix, Ariz. He plans to operate as a manufacturers' agent in Arizona and New Mexico. At the time of his retirement he was advertising and promotion manager of industrial wadding products.

Softwood Tested for Crossties

Railroad crossties of seven species of Oregon softwoods have been placed in several sections of the Southern Pacific main line to check seasoning and wood-preservative treating characteristics. Species used were incense cedar, Douglas fir, Shasta red fir, white fir, western hemlock, lodgepole pine and Sitka spruce.

U.S. Laboratory Gets Citation

For developing packaging methods that helped the armed forces save many millions of dollars, the Division of Material Containers at the U.S. Forest Products Laboratory, Madison, Wis., has received a unit superior service award from the U.S. Department of Agriculture. During the past two years, the Division has worked on more than 200 major packaging problems for the Department of Defense.

Forester Aids Pakistan Lab

Laurence V. Teesdale, engineer at the U. S. Forest Products Laboratory, Madison, Wis., has left for Pakistan to help lay out a new forest products laboratory as part of the Point 4 program. The Far East center will be located on Chittagong across the Bay of Bengal from Calcutta.

Iowan Named Institute Director

Einar B. Oyaas, vice-president and treasurer of Curtis Companies, Inc., Clinton, Ia., was elected a director of the Controllers Institute of America at its 22nd annual meeting recently in Boston.

Industrial woodworkers have told us for years that our Weldwood Plastic Resin Glue is the most reliable wood glue they've ever used... uniform, strong, water-resistant.

But for some purposes they've asked us to develop a ready-mixed glue... a glue that sets fast... and sets firm. Yet with strong dependable bonding qualities! At last we've found one worthy of the Weldwood name. And here it is: Weldwood Presto-Set Glue!

It's an improved polyvinyl white liquid glue that's ready to use right out of the container. Needs no heat, dilutions or special preparation. And that means production time savings.

Presto-Set is freeze-proof and thaw-proof. Sets — ready for machining — in 20 to 30 minutes on some work with soft woods (somewhat longer on hard woods). Joints reach maximum strength in 24 hours!

Try it in your shop! We'd like you to — without cost. Mail coupon for a generous sample which we invite you to test. You be the judge!

In 1 gallon jars and 5, 10, 30 and 55 gallon drums. At any of our 64 convenient warehouses coast to coast, or from your mill supply dealer or industrial distributor.

Make your own tests of

Weldwood® PRESTO-SET® Glue

Mail coupon for free generous test sample

UNITED STATES PLYWOOD CORPORATION
Dept. 27, 55 West 44th St., N.Y. 36, N.Y.

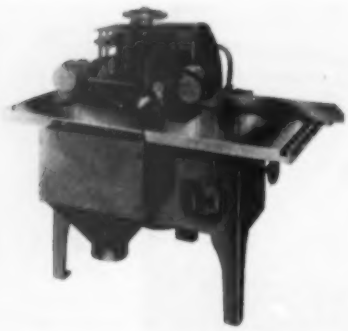
We would like to test your new Weldwood Presto-Set Glue. Please send generous test sample free.

NAME_____

FIRM_____

ADDRESS_____

NEW and IMPROVED PRODUCTS



New Rip Saw Models

Three new models of the XL Ripper have been announced by the Smithway Machine Co., Dept. WP, 4617 Airport Way, Seattle, Wash.

Design changes include a quick-acting saw fence mounted on roller bearings for rapid adjustment, and with a one-twist locking device. The saw motor and arbor has been redesigned for easier maintenance and overhaul and comprises an integral unit. Sealed-for-life ball bearings are used extensively throughout.

Three models, Model 104 (10 hp), Model 108 (10 hp) and Model 208 (20 hp), offer a choice to fit individual needs. All models are adaptable to single blade or gang ripping and have only 10 moving parts in the entire feed mechanism. Feed speeds can be adjusted from 50 to 190 feet a minute.

High-Temperature Blower

A vaneaxial blower designed to move air at temperatures up to 350 degrees F. or air containing acids, alkalies or fine abrasive dust without fear of premature failure of belts and bearings has been developed by the Hartzell Propeller Fan Co., Dept. WP, Piqua, O. Complete removal of vulnerable parts from contact with the destructive elements in the airstream insures long life and trouble-free operation under adverse conditions.

Knotty Pattern Plywood

A new decorative Douglas fir plywood—Knotty Sea Swirl—has been announced by Associated Plywood Mills, Inc., Dept. WP, P. O. Box 672, Eugene, Ore. Made in 4 x 8 ft. panels,

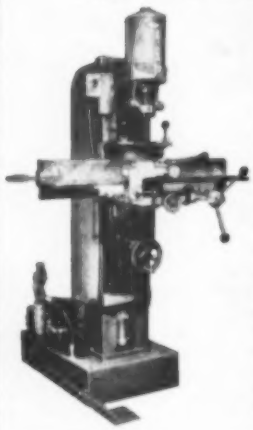
with other sizes available on order, Knotty Sea Swirl has a 3-dimensional appearance and looks identical to its companion product, Select Sea Swirl, except for knot patterns in the panels.

Oscillating Drum Sander

Model 0-5, a new and larger Shapesander for sanding curves, serpentine and straight wood stock, has been introduced by Timesavers, Inc., Dept. WP, P. O. Box L, Robbinsdale 22, Minn. Heavier in construction than its

POWERMATIC

MODEL 5 HYDRAULIC HOLLOW CHISEL MORTISER



NEW . . . precision built — designed for years of trouble-free service

Smooth-working hydraulic sliding head — no jumping, pounding or sticking. Direct drive motor eliminates vibration and noise. Built-in fan keeps work free of chips. Extra-large tilting table permits mortising at any angle. Other outstanding features include quick-acting eccentric clamp to hold work, and foot pedal operation.

Send coupon today for descriptive bulletin.

Powermatic Machine Co.
McMinnville, Tenn.

Please send bulletin describing the new Powermatic No. 5 Hydraulic Hollow Chisel Mortiser.

Company.....

Address.....

City & State.....

Name.....Position.....

Our Methods are Your Gain in

Permawood

We make PERMAWOOD panels with a minimum of waste. By offering standard sizes, we save you money. Other savings are effected in timber selection, use of finer machines and methods to make a better product—PERMAWOOD Hardwood Plywood.

Tapeless Splicers make panel faces from narrow width veneers, after careful matching for color and grain.

PERMAWOOD panels are made in Standard Sizes. Thicknesses in All Veneer construction from 3/20" to 1 1/16", and Lumber Core construction in 3/4" and 13/16". Widths from 30" to 48"; lengths from 36" to 96". Write for latest stock lists and prices.

DARLINGTON VENEER CO., INC.
Established in 1918
DARLINGTON, SOUTH CAROLINA

world's
largest
maker
of **hardwood floors**

selects

KIRK AND BLUM

dust control

Two of a number of the new, more efficient "Type C" KIRK & BLUM Centrifugal collectors serving this modern woodworking plant.

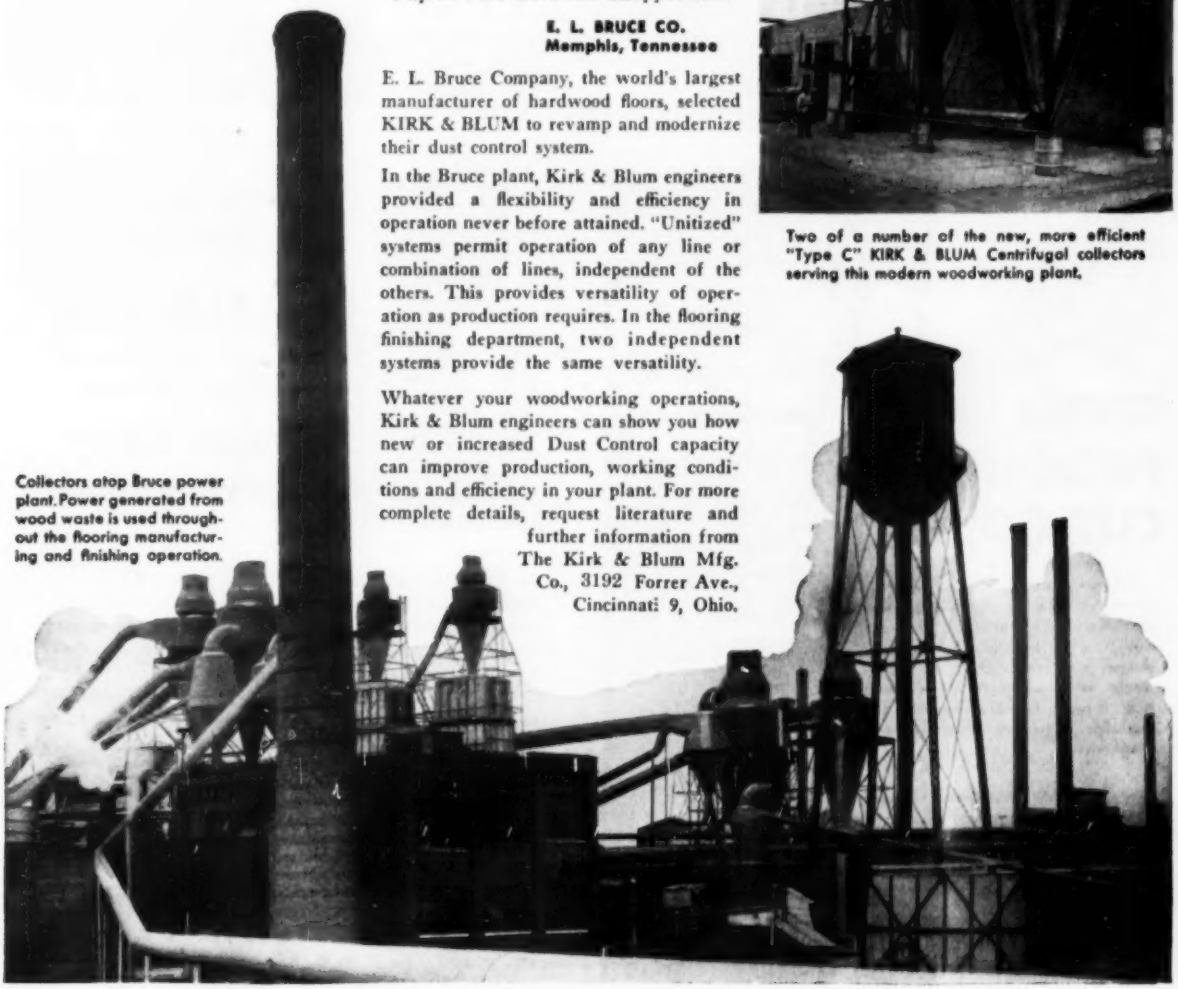
"Our feeling was that you could give us better engineering and workmanship . . . we were not disappointed."

E. L. BRUCE CO.
Memphis, Tennessee

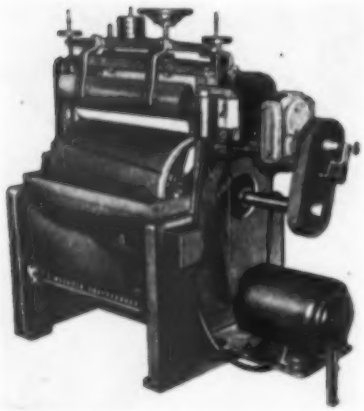
E. L. Bruce Company, the world's largest manufacturer of hardwood floors, selected KIRK & BLUM to revamp and modernize their dust control system.

In the Bruce plant, Kirk & Blum engineers provided a flexibility and efficiency in operation never before attained. "Unitized" systems permit operation of any line or combination of lines, independent of the others. This provides versatility of operation as production requires. In the flooring finishing department, two independent systems provide the same versatility.

Whatever your woodworking operations, Kirk & Blum engineers can show you how new or increased Dust Control capacity can improve production, working conditions and efficiency in your plant. For more complete details, request literature and further information from The Kirk & Blum Mfg. Co., 3192 Forrer Ave., Cincinnati 9, Ohio.



Collectors atop Bruce power plant. Power generated from wood waste is used throughout the flooring manufacturing and finishing operation.



Model S, it features an oscillating sanding drum and a "magic touch" feed roll. The drum is built in 24 in. and 36 in. widths and in greater widths for special applications.

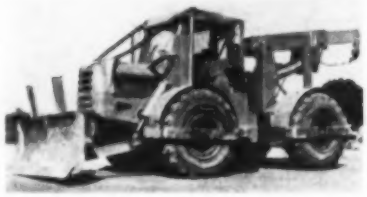
Winter-Proof Glue

Wood-Lok No. 3026, a new year-round resin glue which is not affected by repeated freezing and thawing in shipment or storage, is available from National Adhesives, Dept. WP, 270 Madison Ave., New York 16, N.Y. Unaffected by changes in temperature, this glue produces uniform setting and fast production.

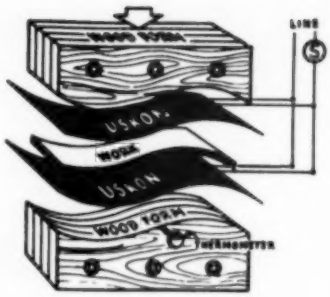
Wood-Lok 3026 produces high strength bonds with low clamping pressure, and assemblies can be passed through subsequent operations after a clamping period of 15 to 20 minutes.

Logging Machine

A machine that combines a tractor with winch, dozer blade, logging arch and crane into one unit is the new Loggermobile Model LG10, designed and built by Mixermobile Mfrs., Dept. WP, 8027 N. E. Killingsworth St., Portland 20, Ore.



Some of the features include hydraulically controlled live arch used for lifting ends of logs, dozer blade with hydraulic tilt control and four-wheel power steering. Full power on all four wheels in any degree of turning is achieved by a new principle of power steering. Diesel power is optional at extra cost.



"Blankets" for Glue Curing

A thin, flexible blanket, connected to ordinary electric power supply, will quickly heat to operating temperatures of about 200° F.

Called Uskon Heating Units, they are sold by Washburn Electric Co., Dept. WP, 202 Sherwood Pl., Englewood, N. J.

Each unit consists of a conductive rubber heating element vulcanized between two layers of flexible insulation. Standard sizes range from 1 by 2 feet to 4 by 8 feet. The units are particularly suited for gluing curved plywood forms.

New Type Wall Paneling

A new, textured, highly grained

SPEED UP PRODUCTION CUT COSTS
Onsrud
BITS AND CUTTERS
FOR
GROOVING
ROUTING
CARVING
BORING
MOULDINGS
MORTISING
ROUNDING
COUNTERSINK
SHAPING
SCARFING
Onsrud cutters are widely known for correct design, high quality and precision workmanship. They cut freely and smoothly, they last longer, and are economical in cost. Made of finest high speed steel, heat treated under automatic control for maximum hardness and toughness.
Write for Illustrated Catalog. Send sketches or blue prints for engineering advice on your cutter requirements.
Onsrud
ONSRUD CUTTER MANUFACTURING CO.
E. Broadway Libertyville, Ill.

Patents Pending

The Marvelous Montgomery

BLO-HOG

(The only all-purpose hog in the world)

Eats Up Everything!

. . . including Pine, Oak, Gum, Hickory, Elm, Wet Veneer, Round-up and Sandy Bark. Conveyor-fed— no attendant required. Positively protected from major damage by tramp steel. All connections locked — nothing to shake loose. Maintenance costs unbelievably low.

". . . Dear Mr. Montgomery: It is an unbelievable machine and it is still hard to believe that it is actually handling the enormous volume of scrap we are feeding into it. We operate the hog without an attendant—which means a considerable saving.—J. B. Black, Plant Superintendent, Ocala Manufacturing, Ice and Packing Co., Ocala, Fla."

C. I. T. Terms Available

Write for bulletin and details

JACKSONVILLE BLOW PIPE CO.

P. O. Box 3687
Jacksonville, Florida

Engineered

FOR TUNGSTEN CARBIDE

MEYCO carbide tipped circular saws ARE DIFFERENT, because the blade and teeth have been engineered for tungsten carbide. It is this know-how of building a carbide tipped saw from the ground up, that has made MEYCO saws popular and accepted as the standard of the industry. MEYCO saws will run longer between grinds, give you more regrinds, produce smoother cuts and save you many times their small extra cost over ordinary circular saws. Write for fully descriptive catalog and price list No. 27.

W. F. MEYERS CO., INC., BEDFORD, INDIANA

This Month MOWER Features . . .

Appalachian YELLOW POPLAR

in Solid and Glued Semi-Finished Dimension Stock

Check these uses . . .

Core stock, counter tops, shelving, paneling, furniture, caskets, musical instruments, store fixtures, kitchen cabinets, woodenware, baker's equip., pipe organs, scientific instruments, millwork, boxes, crates and infinite other possible uses.

Check these features

Straight close fine grain; uniform texture; little shrinking, swelling, warping; makes strong glue joints; light weight, dimensional stability; non-rising grain; works easily, no oils or resins to bleed.

Send us today your complete Yellow Poplar dimension stock requirements for a prompt quotation. Also requirements for other species. You'll be surprised when you check it against your present costs including freight, waste, bundling, etc. You'll agree that it is smart to concentrate your Appalachian Hardwood needs with Mower.

MOWER LUMBER COMPANY

P. O. Box W-2151 • Charleston, W. Va.

Phone 37-638

Mills at Cass, Durbin, Dailey, Nellen, W. Va.

HANCHETT

AUTOMATIC

circular saw sharpener

MODEL 772 HEAVY DUTY

with AIR OPERATED shift

NEW AIR POWER in shift mechanism of grinding head results in smoother operation and reduction of moving parts to an absolute minimum.

PRECISION-BUILT for rip, crosscut, slasher, and inserted tooth saws from 20" to 72" diameter and larger. The 772 is constructed for heavy duty service in sawmills, pulp and paper mills, veneer, plywood and woodworking mills of every kind.

Write us about our complete line of Saw Sharpeners for all types and sizes of saws.

HANCHETT MANUFACTURING COMPANY

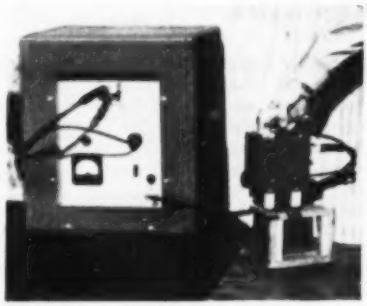
World's Largest Manufacturer of Saw Sharpening and Knife Grinding Machinery

MAIN OFFICE — Big Rapids, Michigan **WEST COAST** — Portland 4, Oregon

wood wall paneling, Ripplewood, has been announced by the Georgia-Pacific Plywood Co., Dept. WP, Olympia, Wash. Made from old-growth western upland hemlock and specially processed to accentuate the wood's beautiful, swirling grain, the panels are sealed with a new type of resin slightly pigmented with white. They come in 4 x 8 ft. panels and in 12 and 16 in. squares, 5/16 in. thick.

Improved Humidifier

An improved humidifier which can maintain desired relative humidity at approximately one per cent variation is being manufactured by the Southworth Machine Co., Dept. WP, Portland, Maine. It automatically maintains the desired moisture content in an area of 15,000 cu. ft.



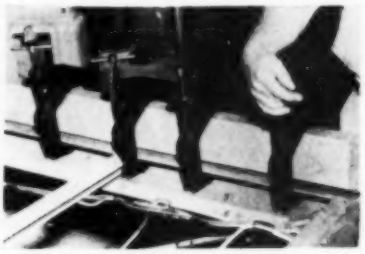
Portable Glue Dryer

A portable electronic glue dryer which can be positioned on the work and tuned by one hand has been recently introduced by the Workrite Products Co., Dept. WP, 808 W. Doran St., Glendale 3, Calif. The unit consists of a generator, 13 ft. of coaxial cable and a lightweight hand gun. A tuning control on the gun can be adjusted by the thumb for variations needed for different glue types.

The dryer, called Workrite Welder, works well on wet or dry woods and is used for veneering, paneling, banding, laying hardwood and parquet floors and furniture fabrication. Special electrodes are available for drying corners, curves and special shapes.

Deep Throat Clamp

A new Saxton 6 in. clamp with a 5½ in. throat depth is now being produced at Centinela Industrial Supply Co., Dept. WP, 11930 Inglewood



Ave., Hawthorne, Calif. The new unit applies straight line force at point of clamping to eliminate stress and strain hazards. Weighing 4 lbs., the deep throated unit sacrifices nothing in strength and has ability to grip rounds, flats and non parallel surfaces.

Refuse Conveyor Drag Chains

A new combination class H drag

RESAWING 15/16" to 13/32"
at High Speed!

with the McDonough 54"
vertical Band Resaw

Resawing extremely tough, stringy cottonwood 5⅛" wide at a rate of 155' per minute is quite a feat according to this user. Lumber 15/16" thick yields two 13/32" pieces of remarkable accuracy in thickness because the saw doesn't snake. Accuracy, power and easy operation are built into *all* McDonough Vertical Band Resaws. Write for illustrated bulletins.

McDONOUGH MFG. CO.
1504 GALLOWAY, EAU CLAIRE, WISCONSIN
World's Largest Producer of Vertical Band Resaws

turn scrap into profit with
M&M HOGGING
EQUIPMENT

Utilize every bit of scrap by turning it into extra dollars with M & M hogging equipment. M & M machines are built in many types and sizes for slabs, edgings, trim, blocks, veneer, bark, and other combustible waste. Send us your scrap problem and we'll show you how M & M hogging equipment can solve it.

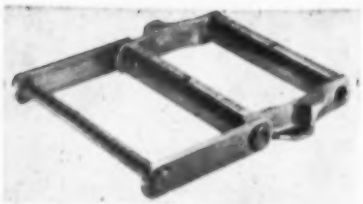
MITTS & MERRILL
1018 South Water • SAGINAW, MICHIGAN

69

for every Saw-Sharpening need

This makes sense: Simonds Sawmakers *should* know how to make the finest saw files made . . . and experienced sawfilers know that they do. That's the bonus in know-how you get with every "Red Tang" File you buy. Simonds makes one quality only . . . Grade A. And that quality is double-checked by the Simonds "Prover Test." Find out for yourself how much easier it is to keep your saws sharper with Simonds "Red Tang" Files. Order from your Industrial Supplier today.

Factory Branches in Boston, Chicago, San Francisco and Portland, Ore. Canadian Factory in Montreal, Que.



chain for operation in refuse conveyor troughs at sawmills and other plants is now available in four sizes from Link Belt Co., Dept. WP, 307 N. Michigan Ave., Chicago 1. The cast links of the chain have large wearing shoes projecting beyond the rivet heads to offer protection to the rivet heads and provide broad sliding surfaces.

Hydraulic Pusher

A hydraulic pusher attachment available from the Materials Handling Division, Dept. WP, Yale & Towne Manufacturing Co., Philadelphia, Pa., makes it possible to unload many kinds of loads by pusher action, thereby eliminating manual handling. With the pusher attachment, loads can be carried directly on the forks and placed directly over the spot where it is to be left. As the truck backs away, the pusher travels forward at the same speed, dropping the load into position.

Tree Girdling Tool

"Handi-Girdler," a new tool for girdling trees quickly and easily, has been developed by the Utility Tool & Body Co., Dept. WP, Marion, Wis. The one-piece tool is designed for use in the treatment of trees intended for poles, fence posts and pulpwood and for removal of inferior and undesirable trees from the stand. It cuts a 3 in. band, which in the case of pulpwood particularly, is then treated with chemicals.

Hydraulic Wedge Tree Feller

Tests of a new hydraulic wedge for felling trees have been completed by the Hufford Machine Works, Dept. WP, El Segundo, Calif. Weighing about 20 lbs. and measuring 24 in. long, it replaces the usual sledge hammer and numerous wedges.

Named the Hydra-Wedge, the unit consists of a manually operated hydraulic pump, a power cylinder and a tapered wedge attached at the end of the piston rod. It is said to effect lifting forces up to 90,000 lbs.

Slivers? Try Seamless Glove

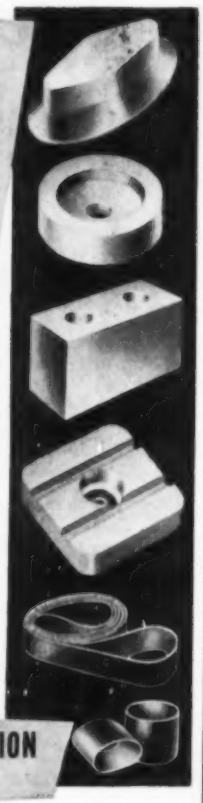
Working together, mill personnel and management of Weyerhaeuser Timber Co.'s Everett lumber division have come up with a solution for the minor, but painful, accidents caused by troublesome wood-slivers driven into hands along the production line. The answer lies in a glove with seamless palm and thumb component.

The new gloves, designed with the help of the men who use them, have a leather face, wrist guard and thumb. The back is canvas. Placed in use only a few months ago, their use by green-chain pullers, planing mill off-bearers, unstackermen and other employees who constantly handle lumber has virtually stopped the parade of 40 to 50 men a month to the plant's first-aid room.

Why to buy

BROADWAY RUBBER PARTS

for Woodworking Machines



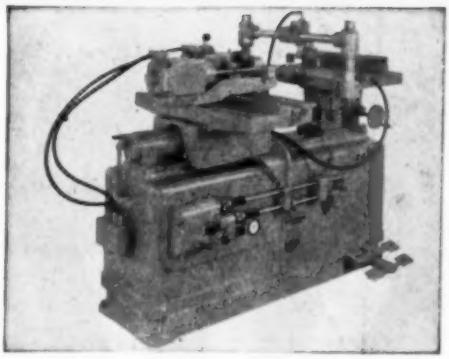
Next time you replace rubber parts on your woodworking machinery, be sure you put in parts that will give you most service for your money and greatest freedom from down-time—get Broadway Rubber parts. Broadway Rubber white molded rubber cups and blocks, rubber tires for sander pulleys and band saw wheels, and glue spreader rollers, are made to fit all leading makes of woodworking machinery. Also vacuum forming bags, and white rubber mallets.

For more information, or free copy of our latest "Wood Industries" bulletin, address Mr. J. W. Fisher..

BROADWAY RUBBER CORPORATION

LOUISVILLE 2, KENTUCKY

NEW DOWEL BORER — FAST — ACCURATE



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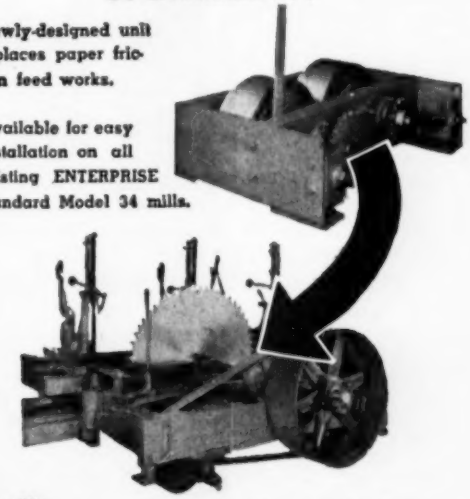
Available for easy installation on all existing ENTERPRISE Standard Model 34 mills.



Faster cutting speeds. Less wear. Horsepower rating 20.

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NEW CATALOGS and LITERATURE

Gluing Reports

Three new reports on glues and gluing are available from the U.S. Forest Products Laboratory, Dept. WP, Madison 5, Wis. "Gluing Techniques for Beech" by W. Z. Olson, technologist, and R. F. Blomquist, chemist, is No. 5 in a series on the utilization of beech. Also available are Technical Note No. 257, "Woodworking Glues of Natural Origin," and Technical Note No. 258 which gives similar information on resin glues.

Generating Plant "Blue Book"

A pocket sized "Blue Book" of general information concerning the selection of engine driven electric generating plants is available from D. W. Onan & Sons, Dept. WP, Minneapolis 14, Minn. A guide to answer a prospective plant owner's questions, the booklet discusses A.C., D.C. and battery charging plants and reviews important points to remember in selection of an electric generating plant.

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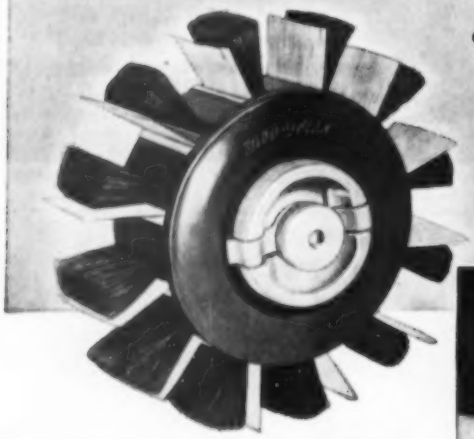

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On any wood surface, curved or flat, Sand-O-Flex wheels produce the surface you want... *quickly*. Flexible brushes back up the abrasive strips and conform them to the shape of the object sanded. On uneven surfaces you easily, speedily sand recessed areas that would be hard to reach any other way. Sand-O-Flex puts beautiful satin finishes on metal and is equally effective on plastics and other materials that require sanding, de-burring or finishing. As abrasive strips become worn, twisting a knob feeds out fresh abrasive from the reel inside the wheel. Replacement abrasive strips in many grits are available and easily inserted.

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Sanding Problem?

Write us about it. Our experts will gladly study your problem, and they have a way of producing sound suggestions. No obligation... write us today.

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Dial Thermometers

A 16-page bulletin describing dial thermometers for long distance measurement has been issued by the Foxboro Co., Dept. WP, Foxboro, Mass. The bulletin, No. 467, provides complete data on temperature indicators of the vapor pressure and gas pressure types, emphasizing in particular the variety of ranges and the bulbs, tubing and accessories available.

Farm Forestry 40s Report

A report on "Fifteen Years of Management on the Crossett Farm Forestry Forties" by R. R. Reynolds has been published as Occasional Paper 130 and is available from the Southern Forest Experiment Station, Dept. WP, 704 Lowich Bldg., New Orleans 13. The paper gives a detailed account of two demonstration farm forests that have been managed since 1937 on the Crossett Experimental Forest in southern Arkansas. Reynolds stresses the timber-growing potentialities on well managed farm woodlands.

Drill Unit Brochure

A brochure describing the new lightweight Hause Holomatic model 14 drill unit is available from Hause Engineering, Dept. WP, Montpelier, O. It describes the air actuated and completely automatic features of the unit.

V-Belt Manual

A new 52-page technical manual covering all elements of V-belt drives is being offered by the Boston Woven Hose & Rubber Co., Dept. WP 609-26, P.O. Box 1071, Boston 3, Mass. The manual, complete with tables, graphs and diagrams, has been compiled as much for maintenance supervisors, mechanics, purchasing agents and students as for the graduate engineer group.

U. S. Forestry Report

Answers to many of the questions being asked about this country's timber supply are supplied in a 32-page pocket-size illustrated booklet available from American Forest Products Industries, 1816 N St. N. W., Washington 6, D. C. Photos and charts are used to depict the nation's new forest economy based on growing and harvesting continuing crops of trees.

Electronic Controls Handbook

A new edition of "Cutting Production Costs with Electronic Controls" has been published by Photoswitch

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more PLUS Features

- **SHORTENS ASSEMBLY TIME.** Assemblies can be passed through all subsequent operations after a clamping period of only 15 to 20 minutes. Reduces costly delays in assembly lines and spray booths.
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- **ALWAYS READY FOR USE.** No costly labor for preparation. No wastage due to hardening in glue pots.
- **FASTEST SETTING WOOD-LOK 3026** is unaffected by changes in temperature. Eliminates hot glue pots. Produces uniform setting regardless of shop temperatures.
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WOOD-LOK, which is unexcelled for the manufacture of case goods, is also unexcelled for laminating plastic/plywood dinette tops, gluing flush doors, and gluing composition and synthetic woods.

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Incorporated, Dept. WP, 77 Broadway, Cambridge 42, Mass. The 46 new case studies explain how standard packaged electronic controls have solved many problems of weighing, counting, measuring, timing and cycling, thereby achieving new efficiency for all types of industrial applications.

Cutting Tools Catalog

A 52-page catalog (No. 53) of power tools for cutting, shaping, drilling and finishing can be obtained from Boice-Crane Co., Dept. WP, 929 Central Ave., Toledo 6, O. Illustrated in 2 colors, the catalog describes bandsaws, contour saws, band filers, drill presses, tool and knife grinders, jig saws, jointers, lathes, planers, belt, drum and spindle sanders, saw jointers and tables, and shapers and shaper cutters.

Materials Handling Booklet

A 42-page booklet, "Improving Materials Handling in Small Plants," can be obtained for 20 cents from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. The subject applies to the movement of raw materials, parts-in-process, and finished products, and includes both manual and mechanized operations. Proper equipment, efficiency and safety are discussed.

Engines Booklet

An 8-page booklet called "More Power at Less Cost," describing application of six sizes of engines to fit the needs of sawmill operators and other industrial users, is available from the Caterpillar Tractor Co., Dept. WP, Peoria, Ill. The booklet accents capacity, economy and compactness along with each unit's power.

Floor Trucks Booklet

A 16-page pocket size booklet (53-S) illustrating 32 different types of trucks for easier and safer materials handling is available from the Nutting Truck and Caster Co., Dept. WP, 1467 W. Division St., Faribault, Minn.

Hoisting Equipment Booklet

Hand and electric hoisting equipment is described in Bulletin 1567, available from the Materials Handling Division, Dept. WP, Yale & Towne Manufacturing Co., Philadelphia 15, Pa. Titled "There's a Yale Hoist for Every Lifting Job," the 12-page booklet illustrates the most suitable hoist for the "big" job, the "specialized" job, the "occasional" job and "every" job.

Fire Prevention Rules

A colorful cartoon booklet which does a splendid job of convincing plant workers that fire rules are important has been published by the National Safety Council, Dept. WP, 425 N. Michigan Ave., Chicago 11. Titled "There'll be a Hot Time in the Ol' Plant," this new Will Eisner booklet concludes its fire prevention message with some sound tips on what to do in case of fire.

Knife Grinding Manual

A 67-page Knife Grinding Manual, containing valuable information that would be useful to any grinder operator, is being offered at $1.50 by the Dependable Machine Co., Dept. WP, Greensboro, N. C. Among subjects covered are: erection of proper grinding room, composition and speed of grinding wheels, care and service, setting knives, jointing and dry grinding vs. wet grinding.

Does your glue dollar buy you ALL it should?

You'll Stick with us Because we Stick for You!

Delivery of your glue is only the start of what your Purchase Order entitles you to, as a customer of National Casein. Our technical staff stays with you until your personnel is thoroughly indoctrinated. You get periodic check-up calls by sales representatives who are "shirt-sleeve" Glue Men. You get full benefit of our laboratories on tough adhesive problems. You get your requirements delivered as and when needed. You get glues you stick with because they stick for you.

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A WOOD Trading Post Ad will find Men—Materials—Machinery (See Page 76)

QUALITY CONTROL

Continued from Page 22

control techniques on these operations, from kiln drying and swing-sawing on through core building in a Plycor machine and planing of cores, was a major undertaking.

Of considerable concern, in the search for ways and means of reducing loose veneer on panels, was the control of variation in thickness within a core. The advice of The Forest Products Laboratory that a within-core thickness variation of .005 in. was a reasonable requirement led to the adoption of this figure as a standard.

For many years, only planers made by Manufacturer "A" had been used. Thus when the finishing planer, made by Manufacturer "B" was installed in the rough dimension line, upon the recommendation of the engineering department, considerable misgivings concerning the new planer existed on the part of the personnel charged with operating it and maintaining it.

It was with this background, that quality control, asking for control of thickness variation within a core of .005 in. as received out of the planer, entered the picture. An average and range chart was set up, using a core as a subgroup and taking four micrometer measurements, one near each corner of the core.

Care always was taken to record the data in the same manner, the first measurement being the corner first entering the planer and the subsequent measurements being taken clockwise around the core. This orderly recording of data later provided invaluable information. Because the range portion of the chart, in this instance, clearly indicated the ability of the planer to produce a uniform thickness within a core, Figures 4a, 4b, 4c, and 4d show only the range charts.

Figure 4a shows the data first taken on planer "B", the machine in question. It will be noted that the average variation in thickness within a core was .0093 in. with a reasonable expectancy of obtaining cores with a thickness variation as high as .0217 in. (upper control limit). Clearly, this performance of planer B was unsatisfactory. Simultaneously, similar data, for comparison purposes, was taken on a planer of Manufacturer "A". Here, the range was approximately .005 in. Needless to say, the misgivings of the operating personnel were not relieved by these studies!

Manufacturer "B" was called in to improve the performance of the planer. After considerable investigation and, on the basis of data accumulated by quality control techniques in the manner previously described, Manufacturer "B" concluded that the lower planer shoes were warped, or at least were not parallel.

When the planer was torn down, it was found that one shoe was warped approximately .017 inches! With this difficulty corrected by the manufacturer, data shown in Figure 4b shows a decided improvement, the average range having been reduced from .0095 in. to .0039 in. and the upper control limit reduced to .009 in.

This improvement however, was very short lived. Figure 4c shows data taken two days after the planer had been revamped. The average range had jumped back up to .0086 in. and the upper control limit to .0196 in. Again this performance was unsatisfactory. The manufacturer had discharged his responsibility and it clearly was up to the operating personnel to take the action necessary to obtain proper performance.

At a conference of all interested parties, the superintendent of the operating department, sensing the situation, "broke the case wide open"

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Close-up of top, showing sanding head assembly and different contours handled.

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- Justifies itself by cost savings in small or large lots.
- Sands various shapes, sizes and thicknesses of chair backs at production rate of 18 to 55 feet per minute.
- Sands curved or serpentine stocks, concave or convex surfaces up to 1½" thick and 6" high.
- Maintains perfect parallelism of stock . . . sands curvatures of 5" on an arc of 30 degrees, and 8" on an arc of 90 degrees.
- Eliminates danger of sanding over a large sanding drum.
- Only one set-up required with Nash 85 . . . adjusting feed rolls to thickness of stock, and regulating pressure for desired stock removal.
- And remember . . . it's a Nash, "Standard of the World" in woodworking machinery since 1890. You can be sure of sturdy construction, long life and low upkeep.

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SHREVEPORT, LOUISIANA

by openly stating his doubt as to the ability of his expert setup man to correct the situation.

This provided the spark of incentive needed! Within a couple of weeks, the planer was operating very well and has continued to do so since!

The climax was reached when the setup men and foreman, who had for so long entertained misgivings about planer "B", asked the author to set similar charts on planers of Manufacturer "A" since they were not performing as well as planer "B"!

Case Study Four

Since a large volume of the veneered panels used in our plant are obtained as rough veneered panels from our southern plants, it was immediately apparent that if control of quality was to be maintained in the machining and sanding operations, an effective screen must be set up to insure that the quality of material entering these processes be controlled at an economical quality level.

The statistical quality control technique of acceptance sampling and the many published plans thereunder were studied in detail. The acceptance sampling plans adopted for this application were those published by the Columbia Statistical Research Group.

It had been a long standing practice to charge back to the supplying plants the cost of excessively defective material. However, the inadequate "spot checking" and the lack of proper organization of this inspection all too frequently permitted the cost of this defective material to be absorbed in the production process.

Through discussion of the objectives of the overall plan, an agreement was reached with the supplying plants to charge back the cost of defective material above and beyond a predetermined quality level.

However, a plan of this sort which merely transfers the cost of defective material from one plant to another within the same organization falls far short of the desired objectives. The only real gain can be made when the supplying plant can effectively improve their quality.

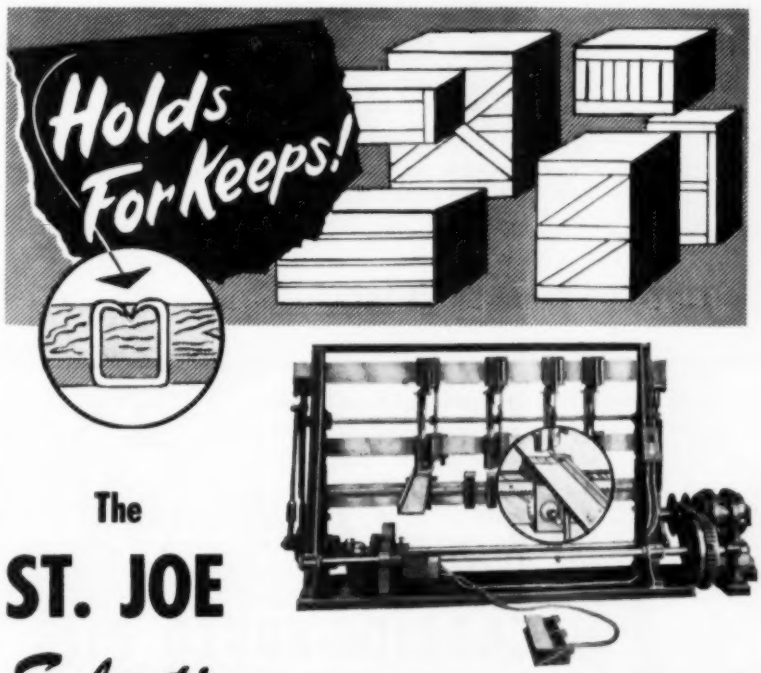
With the aid of a manual, prepared to fully explain the details of the sampling plan, and close coordination between plants, the supplying plants are setting up the same acceptance sampling procedures prior to shipment. Thus the magnitude and nature of defects can be readily detected at source and, it is hoped, will provide the impetus for courses of action to reduce effectively the amount of defective material produced.

In a program of this sort, frequent visits by both supplier and consumer are of inestimable value.

One of the principal problems to be overcome in this inter-plant quality control was the establishment of clear, concise standards. A comprehensive manual of inspection standards was prepared, defining, among other things, the tolerance on overall size, the short and narrow veneer tolerance, the various types of defects such as split veneer, mismatch of spliced veneer, warp, etc. and the degree to which they could be tolerated, and the grade of veneer to be used. The use of photographs has proven useful in defining many of these visual quality characteristics.

Editor's Note.—*The foregoing article, along with Part 1 which appeared in October WOOD & WOOD PRODUCTS, was adapted from a paper presented by Mr. Calahan at the 1953 Forest Products Research Society meeting.*

Vacationing in Chicago? Be Sure to Take the Family to See the New HARDWOOD EXHIBIT Museum of Science and Industry, 57th Street and South Shore Drive



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Due to the ST. JOE exclusive automatic form positioning device, crate sections are swiftly passed through the machine eliminating hand and eye positioning methods.

A ST. JOE stapled crate "holds for keeps" (see cross section). Low cost wire is fed from a reel—the ST. JOE stapling heads automatically form, drive and clinch the stock. Full control of wire is retained at all times with the exclusive ST. JOE ratchet pawl feature . . . accurate wire feeding for every staple eliminates crippled staples and wasted sections.

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The rate of volume being added by growth of trees today is more than twice the estimate in 1920.

?

The gross value of U. S. timber products exceeds fifteen billion dollars annually.

?

Canada exports more wood than the Canadians themselves consume.

?

Special railroad equipment was required to ship the 6 glued laminated beams 97′ long, 5′ wide and 11″ thick manufactured in Portland for a school gymnasium in Illinois.

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The first solo flight across the Atlantic from New York to Paris was made in an airplane with Sitka spruce formed wings. This plane, "The Spirit of St. Louis", was flown by Charles Lindbergh.

?

Probably the largest wooden logging railroad bridge is on Baird Creek, in Washington, built in 1940 using 400,000 feet of pressure treated and 200,000 feet of untreated lumber and piling. It is 1130 feet long and 235 feet high.

WOODICTIONARY

TOE RING

The heavy ring or ferrule on the end of a cant hook.

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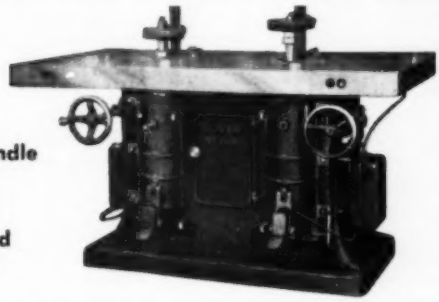
give all-around fast, smooth work



Double Spindle Shaper is unmatched on light and heavy cuts

With or against the grain, this Shaper does smoothest work. Entire spindle unit can be lifted from yoke without removing yoke from machine. Offered with three types of drive: motor-on-arbor, close coupled belted motor, and V-belt drive, giving you spindle speeds to suit the work. Write for Bulletin No. 288.

With or against the grain the No. 287 produces smoothest work

This "Oliver" has many of the advantages of a two-spindle machine. It rabbets, grooves, routs, shapes with speed and accuracy. Choose from three types of drive: motor-on-arbor for speeds up to 8400 r.p.m., close coupled motor drive for spindle speeds of 7200 r.p.m., and V-belt drive for speeds of 6000 r.p.m. or less. Write for Bulletin No. 287.

OLIVER MACHINERY COMPANY, GRAND RAPIDS 2, MICH.

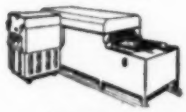
Let These Electronic Units SPEED Your Production

You can cut hours — even days — off production schedules with Mann-Russell Electronic equipment—generators, patchers, lumber and veneer edge-gluers. All units custom-designed to meet your particular needs and installed by factory-trained experts.

If your production calls for gluing up short lengths, edge-gluing hard or soft wood veneers, or other lamination — write today for specific data outlining your problem.

Mann-Russell RF Generator

Mann-Russell Veneer Edge-Gluer



Mann-Russell Lumber Edge-Gluer

Mann-Russell Electronics

NORTHWEST SYNDICATE, INC.

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• ELIZABETH, NEW JERSEY

TESTING GLUE JOINTS

Continued from Page 34

sample is symmetrical on both sides of the central layer. It should be made as nearly like the standard sample as is practicable.

Q. 136. What is the "block shear" test?

A. 136. The *block shear* test is also a standard test, used principally to evaluate the strength and durability of a glue joint, which may be an assembly joint, a structural joint, or a joint in laminated timber. The test sample is made up of blocks of lumber, rather than layers of veneer, the grain of the layers of wood at the critical joint are parallel, and the stresses imposed in the test are also parallel to the wood grain.

This is in contrast to the plywood shear test, where the grain of the central layer (Fig. 1) is opposed to that of the adjacent layers, and the stresses imposed are across or sideways on this central layer.

A typical block shear test sample is shown in Fig. 4, and it is usually made of selected hard maple. The specimen must withstand an imposed load of 2,800 lbs. p.s.i. *parallel* to the grain.

It is to be noted that this block shear requirement of 2,800 lbs. p.s.i., parallel to the grain, is very much higher than the 250 to 350 lbs. p.s.i. across the grain, as is demanded in the plywood shear test.

In the testing of laminated timbers, such shear block specimens may be cut in multiple form, as shown in the upper sketch of Fig. 5, or may be cut alternately as shown in the lower sketch of Fig. 5. This latter plan includes all of the glue joints as is indicated by the figures on the sketch.

The fixture required for testing the specimens is shown in Fig. 6, which applies a downward shear directly on the glue line. Since the area of this glue line is 3 sq. in. (2 in. x 1½ in. = 3 in.), the dial readings must be divided by 3.

Durability tests on block shear samples are also provided by cycles of soaking and drying, which may modify the requirement of 2,800 lbs. p.s.i. on hard maple blocks.

Since white oak is extensively used in laminated keels and boat parts in naval craft, the strength required for white oak shear blocks has been established at 1,800 lbs. p.s.i. One of the advantages of such wooden craft is that it is not readily picked up on the radar screen.

Q. 137. It is my understanding that

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the "plywood shear" and "block shear" tests are especially applicable to glues and adhesives which must exhibit maximum waterproof qualities. Are there not simpler tests for lower ranges of durability, such as substantial moisture resistance?

A. 137. The customary procedure for moisture resistant plywood, used in both the U. S. and Canadian standard commercial specifications, is to subject 6 in. x 6 in. square specimens of plywood to several types of cyclic wet and dry tests. The number of cycles and the severity of the exposure will determine the degree of moisture resistance. In the Canadian specification, for exterior plywood, after a 2-cycle boil-dry test, the specimen shall show no delamination on any edge.

In both Canadian and U. S. specifications (hardwood) for interior types, such 6 in. x 6 in. specimens, soaked and dried, shall exhibit not more than a total of 2 in. of delamination on the 24 in. periphery of the specimen, and the delamination shall not be more than ⅛ in. deep at any point. The Canadian technique requires more wet and dry cycles than does the U. S. specification.

Q. 138. Is it safe to rely on the results of one, two, or even three test specimens in any standard testing procedure?

A. 138. The general rule is to take averages of five test specimens, since wood varies in character and there can be vagaries in workmanship and in testing techniques. An even better rule is to test in sets of six specimens, since many specifications allow, and some require, that certain types of breaks be eliminated in calculating averages.

An instance is a 100% wood rupture, in either the plywood shear or the block shear test, indicating, usually, a weak or defective piece of wood, which does not put a maximum stress on the glue joint. Most specifications require that such be discarded in establishing averages. On the other hand, a 100% break in the glue line is an indication of poor gluing technique and cannot be disregarded. Test procedures requiring 15 to 25 specimens are not at all unusual.

Q. 139. How often should glue tests be made?

A. 139. There is no fixed rule. In a well established factory, with experienced workmen making a standard product day in and day out, the testing requirements will be far less than

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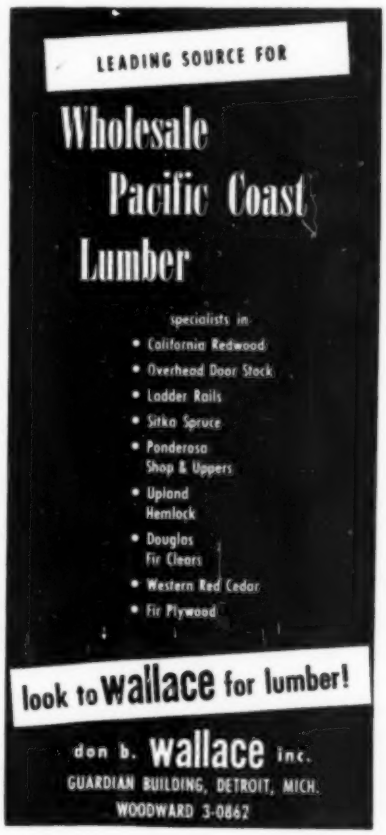
when making new or diversified products with which the crew is not familiar. A fair rule, that might require exceptions, would be one thorough set of tests a day on each type of product that is "in the works".

In the case of "rule-of-thumb" tests, described in Answer 134, most glue room foremen are constantly making these tests to check the work of the crew. These tests do not involve loss of product, as in making the more formal standard tests, and such frequent testing keeps the entire crew alert.

Q. 140. Has any method of electronics or X-ray test been developed that will test glue joints in plywood, without tearing it apart?

A. 140. There have been many attempts along these lines, but with very little encouragement. So far as the writer knows, none of them has received serious attention. It would seem reasonable that such a method could be devised, and the industry is still hoping.



Advertisers' Index

Abrasive Products Corp.	53
Adhesive Products Corp.	49
American Cyanam'd Co.	45
Armstrong Machine Works	40
Associated Plywood Mills, Inc.	37
Bell Machine Co.	50
Berthelsen Engineering Works	52
Black Brothers Co., Inc.	44
Broadway Rubber Corp.	64
Buss Machine Works, Inc.	18
California Redwood Association	54
Chevrolet Div., General Motors	38
Chicago & Eastern Ill. Railroad	4
Coe Mfg. Co.	33
Consolidated Baling Mach'ne Co.	47
Darlington Veneer Co., Inc.	58
Diehl Machine Works, Inc.	35
Dimension Stock	74
Ekstrom, Carlson & Co.	8
Enterprise Co.	63
Finwood Industries	72
Firth Sterling, Inc.	43
Fordyce Lumber Co.	46
Foxboro Co.	48
Frost Lumber Industries	70
Gamble Brothers, Inc.	41
Greenlee Brothers & Co.	17
Greenlee Tool Co.	56
Hanchett Mfg. Co.	61
Hartzell Propeller Fan Co.	80
Jacksonville Blow Pipe Co.	60
Jamestown Veneer & Plywood Corp.	10
Kimberly-Clark Corp.	55
Kirk & Blum Mfg. Co.	59
Mansfield Hardwood Lumber Co.	77
Mattison Machine Works	13
Mauk-Seattle Lumber Co.	5
McDonough Mfg. Corp.	62
Mereen-Johnson Machine Co.	20
Merit Products, Inc.	66
Meyercord Co.	42
Meyers Co., Inc., W. F.	61
Midwest Walnut Co.	65
Minnesota Mining & Mfg. Co.	39
Mitts & Merrill	62
Moore Dry Kiln Co.	12
Mower Lumber Co.	61
Nash Co., J. M.	69
National Adhesives	11, 67
National Casein Co.	68
New England Carbide Tool Co., Inc.	72
Northwest Syndicate, Inc.	73
Oliver Machinery Co.	73
Onsrud Cutter Mfg. Co.	60
Pacific Mutual Door Co.	73
Pacific Panel Co.	40
Perkins Glue Co.	79
Porter Machinery Co.	6
Powermatic Machine Co.	58
Reichhold Chemicals, Inc.	9
Root Co., B. M.	64
St. Joe Machines, Inc.	71
Schrader's Son, A.	15
Simonds Saw & Steel Co.	63
Smith Lumber Co., Ralph L.	65
Smithway Machine Co.	16
Standard Dry Kiln Co.	47
Stetson-Ross	14
Tannewitz Works	49
Timber Engineering Co.	29
Trading Post	76
U. S. Plywood Corp.	57
Wallace, Inc., Don B.	76
Wheland Co.	51
Whitney & Son, Inc., Baxter D.	2
Wood Turnings	75
Woods Machine Co., S. A.	3
Yates-American	42, 48

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Statement required by the Act of August 24, 1912, as amended by the Acts of March 3, 1933, and July 2, 1946 (Title 39, United States Code, Section 233) showing the ownership, management, and circulation of WOOD AND WOOD PRODUCTS, **published every month at Pontiac, Illinois, for October 1, 1953.**

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5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

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Busy as he's been, though, Mr. Mower nevertheless has found time to work in various ways for the advancement of the industry in which he has built up such a large stake. During World War II he served on the OPA Advisory Committee for the Appalachian hardwood lumber industry and on a like committee for the eastern softwood lumber industry. Currently he is an active board member of the Appalachian Hardwood Manufacturers, Inc.,

After forming the Mower Lumber Co. in Charleston and launching his sawmill on Witcher Creek, he set up lumbering and timbering operations successively at Bartow, Grassy Meadows,, Williamsburg, Marmet, Colcord, Pettus, Omar, Cass, Nallen, Durbin and Dailey, all in West Virginia. During this period he was also active in building up South American connections which have resulted in expansion of the export market for West Virginia hardwoods.

Mr. Mower is a native West Virginian, born in Horton, Randolph County, and was educated at the University of Virginia. As a young man he worked in lumber camps and on railroads in his native state. Today he gets around in his own Grumman Widgeon plane, operated by a full-time licensed pilot.

Next to lumber and wood products manufacturing, his greatest love probably is the raising of prize Hereford cattle on his famous Poca Dot Farm. He is married, has two sons, and is an active community worker. He holds many club memberships and his hobbies are hunting, fishing and flying.

FLOYD HART

MEDFORD, OREGON, was mighty quiet to World War I pilot Floyd Hart when the shooting was over, and it was no time before Flying Ace Hart became Barnstormer Hart. In the next year Hart flew his pioneer Jenny into nearly every pasture adjoining any town of size in Washington and Oregon.

Within a year Barnstormer Hart had a good-sized stake for those days and he'd pretty much caught up on his quota of thrills, so back he moved to Medford to look around.

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lumber daily, but one of the most modern remanufacturing plants, a plywood plant and a box factory. A substantial backlog of timber bought during the years supports this operation.

Floyd Hart is a civic leader and active in the affairs of his industry. He is a member of the Oregon State Board of Forestry, vice-chairman of the Industrial Forestry Association, and has held various committee posts in the West Coast Lumbermen's Association.

When World War II got under way, Pilot Hart became a flying colonel. He took the first mass flight of bombers ever flown across the Pacific to Hawaii without losing a plane in the early days of the war. He commanded a bomber squadron from a South Pacific island during much of the war.

One of his prides and joys is a beautiful irrigated ranch a few miles out in Rogue River valley where he grows purebred cattle as a pastime.

Baser Named Managing Editor of WOOD & WOOD PRODUCTS

Nort Baser, associated for the past six years with wood using and forestry organizations in journalistic and public relations capacities, has been named managing editor of WOOD & WOOD PRODUCTS.

Most recently Mr. Baser was midwest regional manager for American Forest Products Industries, spokesman for the nation's processors of lumber, paper and allied products. Previously he was successively assistant and managing editor for four years of American Forests magazine, Washington, D. C. He entered forestry in 1947, after 11 years' experience in Michigan as a newspaper man, by joining the Texas Forest Service.

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